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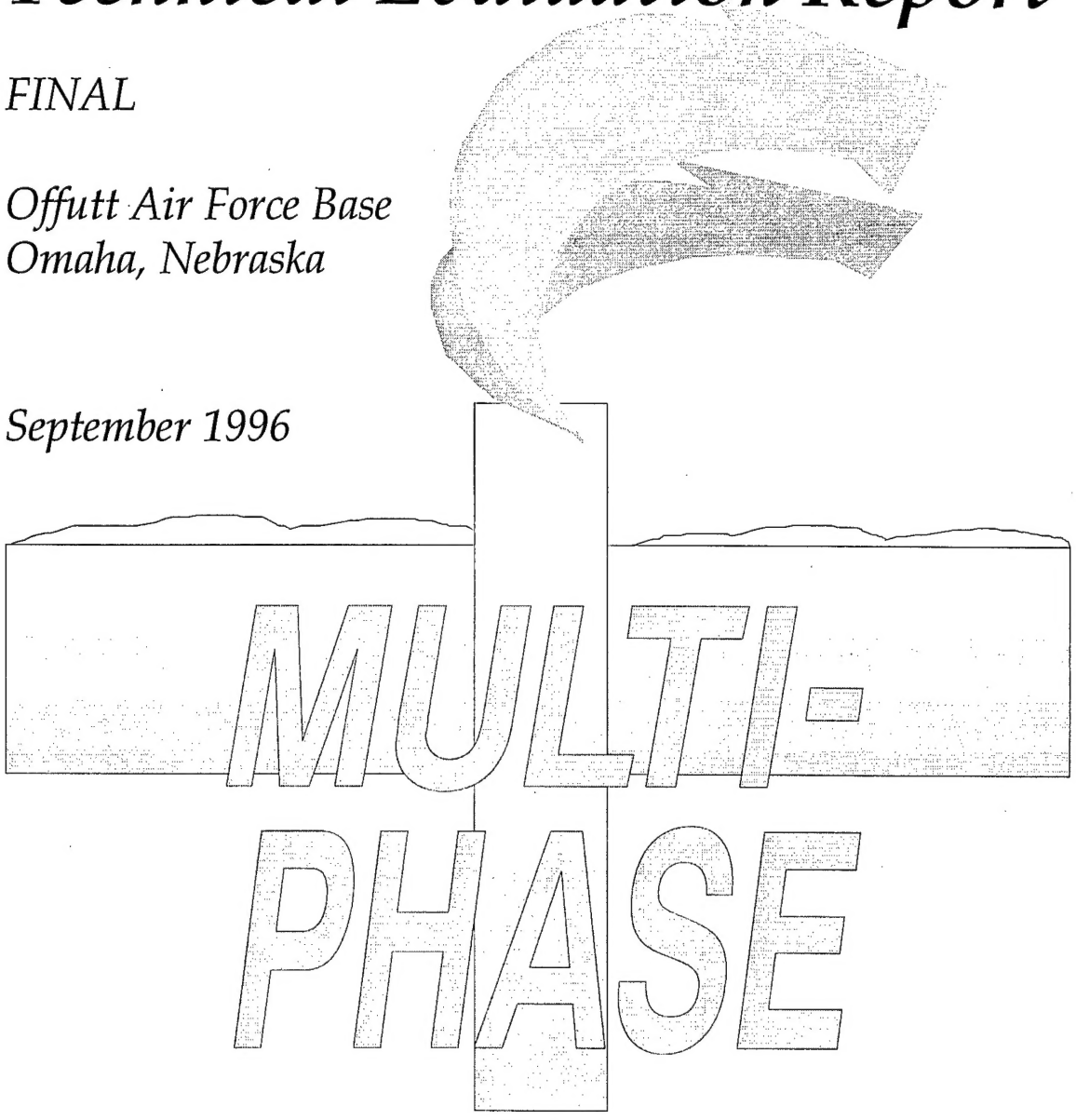
Offutt AFB, Building 301

Multi-Phase Extraction (MPE) Pilot-Scale Test Technical Evaluation Report

FINAL

Offutt Air Force Base
Omaha, Nebraska

September 1996



Prepared for:

U.S. Army Corps of Engineers
Omaha District

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RADIAN
CORPORATION

10389 Old Placerville Road
Sacramento, CA 95827
(916) 362-5332
FAX # (916) 362-2318

19 September 1996

U.S. Army Corps of Engineers, Omaha District
ATTN: CEMRO-ED-EB (Robert Zaruba)
215 North 17th Street
Omaha, Nebraska 68102-4978

SUBJECT: Contract No. DACA45-93-D-0027, Delivery Order No. 27, Mod No. 4
Final Multi-Phase Extraction (MPE) Pilot Scale Test Technology Report
Building 301, Offutt AFB, Nebraska

Dear Mr. Zaruba:

Enclosed you will find two copies of the Final Multi-Phase Extraction (MPE) Pilot Scale Test Technology Report for Building 301, Offutt AFB, Nebraska.

If you have any questions or comments, please give me a call at (916) 857-7281, or call Mike Thompson at (512) 244-0855.

Sincerely,

Maya Christensen for

FRANCIS E. SLAVICH, PE
Project Manager

c: Margaret Calvert, ACC/ESVW (2)
Phil Cork, Offutt AFB (2)
Dave Overbey, Offutt AFB (1)
Mike Thompson, Radian (1)
Tucker Connally, Radian (1)
Suzanne Sellers, Radian (1)
File (2)

OFFUTT AFB MULTI-PHASE EXTRACTION PILOT TEST TECHNOLOGY EVALUATION REPORT FOR BUILDING 301

at

Offutt Air Force Base, Omaha

FINAL

Prepared for:

U.S. Army Corps of Engineers
Omaha District
ATTN: CEMRO-ED-EB
215 North 17th Street
Omaha, Nebraska 68102

Prepared by:

Radian Corporation
10389 Old Placerville Road
Sacramento, California 95827

September 1996

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ACRONYMS

ACC	Air Combat Command
AFB	Air Force Base
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	Cubic Foot (feet) Per Minute
DCA	Dichloroethane
DCE	Dichloroethylene
EPA	Environmental Protection Agency
EW	Extraction Well
GAC	Granulated Activated Carbon
gpm	Gallon(s) Per Minute
HQ	Headquarters
HVDPE	High Vacuum Dual-Phase Extraction
in	Inches
LVDPE	Low Vacuum Dual-Phase Extraction
MCL	Maximum Contaminant Level
MPE	Multi-Phase Extraction
PCE	Tetrachloroethylene
ppbv	Parts Per Billion by Volume
ppmv	Parts Per Million by Volume
PREECA	Presumptive Remedy Engineering Evaluation/Cost Analysis
PVC	Polyvinylchloride
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
scfm	Standard Cubic Foot (Feet) Per Minute
SVE	Soil Vapor Extraction
TCE	Trichloroethylene
TPE	Two-Phase Extraction
USACE	United States Corps of Engineers
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
µg/L	Microgram(s) Per Liter

1.0 INTRODUCTION

In May 1996 Offutt Air Force Base (AFB) and Radian Corporation (Radian) completed a seven-day pilot study test using low-vacuum dual-phase extraction, (LVDPE), a multi-phase extraction (MPE) technology. This report provides a summary of the methodology used during the test, the test results, and base-specific recommendations. Section 1.0 presents the project background, site background, and purpose and objectives of this document.

1.1 Project Background

On 5 May 1995, Headquarters (HQ) Air Combat Command (ACC) published the *United States Air Force Presumptive Remedy Engineering Evaluation/Cost Analysis* (PREECA) (Radian, 1995) as a standardized decision framework specifying the criteria and associated decision logic necessary for implementing specific non-time-critical removal action technologies. This decision framework, developed by Radian in conjunction with the U.S. Army Corps of Engineers (USACE) and the U.S. Air Force, combines the standard Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) non-time-critical removal action process with the concept of presumptive remedies and a "plug-in" logic approach. The result is a remedy selection document that facilitates early and substantial risk reduction. The PREECA applies to a closely defined subset of conditions that the Air Force has found to be common to contaminated sites, and that pose sufficient risk to justify non-time-critical removal actions. This methodology was not intended to be used at sites where the need for cleanup actions is not readily apparent.

In general, PREECA focuses on remedies that can satisfy the majority of these common contamination situations, namely bioventing, soil vapor extraction (SVE), groundwater containment, and capping. However, PREECA is intended to be updated as new, successful remedies are established. In order to add a new technology to PREECA as a presumptive remedy, the conditions under which the technology can be applied successfully must first be determined. These conditions make up what is called a remedy profile.

The Air Force is currently gathering extensive cost and performance data at a number of contaminated sites for addition of the MPE technologies which include LVDPE, high-vacuum dual-phase extraction (HVDPE) and two-phase extraction (TPE). As part of this effort, HQ ACC has contracted with Radian through the Omaha District USACE to evaluate the MPE technologies for inclusion in the Air Force PREECA. Under this contract, Radian, in conjunction with the Air Force, developed an initial remedy profile for both high-vacuum and low-vacuum DPE and TPE based on the results of previous tests done at sites across the country. These remedy profiles are presented in Section 3.1. As more information becomes available, the new data will be used to update and refine the profiles.

The trichloroethene (TCE) groundwater contamination at Offutt AFB was selected as one of the sites where the DPE technology will be evaluated through a pilot scale test, because the site has relatively high groundwater concentrations of chlorinated hydrocarbons and low soil permeabilities that would most likely limit the effectiveness of conventional pump and treat systems in capturing groundwater contaminant plumes. The DPE technology is designed to enhance control of groundwater plumes in low- to moderate-permeability formations, as well as to remove contaminants from the saturated zone.

1.2 Purpose and Objectives

This report presents the results of the LVDPE pilot test conducted at Building 301, Offutt AFB, in May 1996. It evaluates the test results in light of the overall goal of providing additional data to support and improve the initial MPE remedy profile, and demonstrates that LVDPE is an effective remedial technology. In addition, it presents data related to the site-specific objectives which were to:

- Demonstrate the contaminant removal effectiveness of the LVDPE technology at Building 301;
- Determine the feasibility of installing a full-scale LVDPE system at Offutt AFB;
- Collect additional engineering data to aid in the design, installation, and operation of a full-scale LVDPE; and
- Assist in the prevention of contaminant migration, thereby minimizing the threat to human health and the environment.

1.3 Site Background

As shown in Figure 1-1, Offutt AFB is located in Sarpy County, Nebraska, east of the City of Bellevue and south of Omaha, Nebraska. Offutt AFB is the site of the United States Air Force Strategic Command (StratCom) Headquarters.

The pilot test site is located at what is considered the "hot spot" of a plume of TCE contaminated groundwater. This site is adjacent to the northern most corner of a 1,200,000 sq. ft building known as the Martin Bomber Building, or Building 301. It is believed that previous operations conducted in this area have contributed to the TCE contamination, however the exact source is unknown. Figure 1-2 shows the location of the Building 301 LVDPE Pilot Test Site at Offutt AFB.

1.3.1 Subsurface Conditions

The soils underlying the test site at Building 301 consist primarily of clay and silty clay in the shallower Loess formation and sand to silty sand in the underlying Glacial Outwash formations. The water table at the site is approximately 40 ft below ground surface (bgs) (or approximately 1015 feet above Mean Sea Level). The portion of the aquifer most greatly impacted by TCE contamination lies 60 feet below the ground surface. The subsurface permeability varies from low permeability in the Loess regions to higher levels in the Glacial Outwash formations. Slug testing during the Building 301 Remedial Investigation determined the permeability in the Loess formation to be 0.34 ft/day, while the permeability in the Glacial Outwash formation ranged from 3 to 223 ft/day (Woodward-Clyde 1994). A cross section of the area is provided as Figure 1-3.

1.3.2 Nature and Extent of Contamination

A remedial investigation of Building 301 identified a plume of TCE-contaminated groundwater as shown in Figure 1-3 (Woodward-Clyde, 1994). The data collected from previous investigations at Building 301 have been used to characterize the subsurface features and the nature and relative extent of contamination at the site. The primary contaminant of interest is TCE, however 1,2-dichloroethane (1,2-DCA) and 1,2-dichloroethene (1,2-DCE) were identified at concentrations above the maximum concentration limit (MCL). Contaminants 1,1-DCA, 1,1-TCE, vinyl chloride, and carbon tetrachloride were identified at concentrations below the MCLs. The highest concentrations of TCE have been

identified in the silty sand and appear to be migrating in a westerly direction within this layer. Figure 2-3 shows TCE concentrations along a geologic cross section A-A.

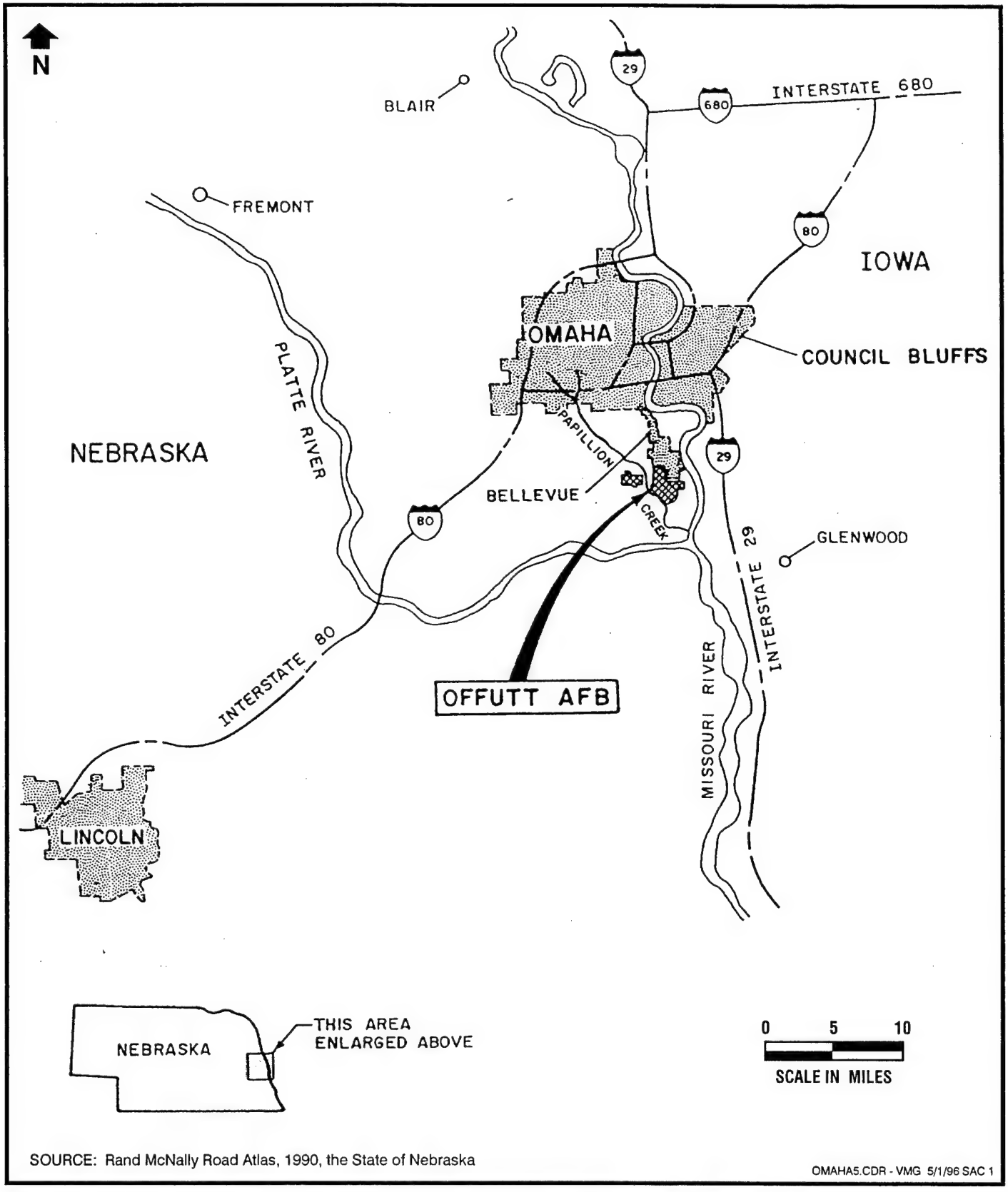


Figure 1-1. Offutt Air Force Base Location Map

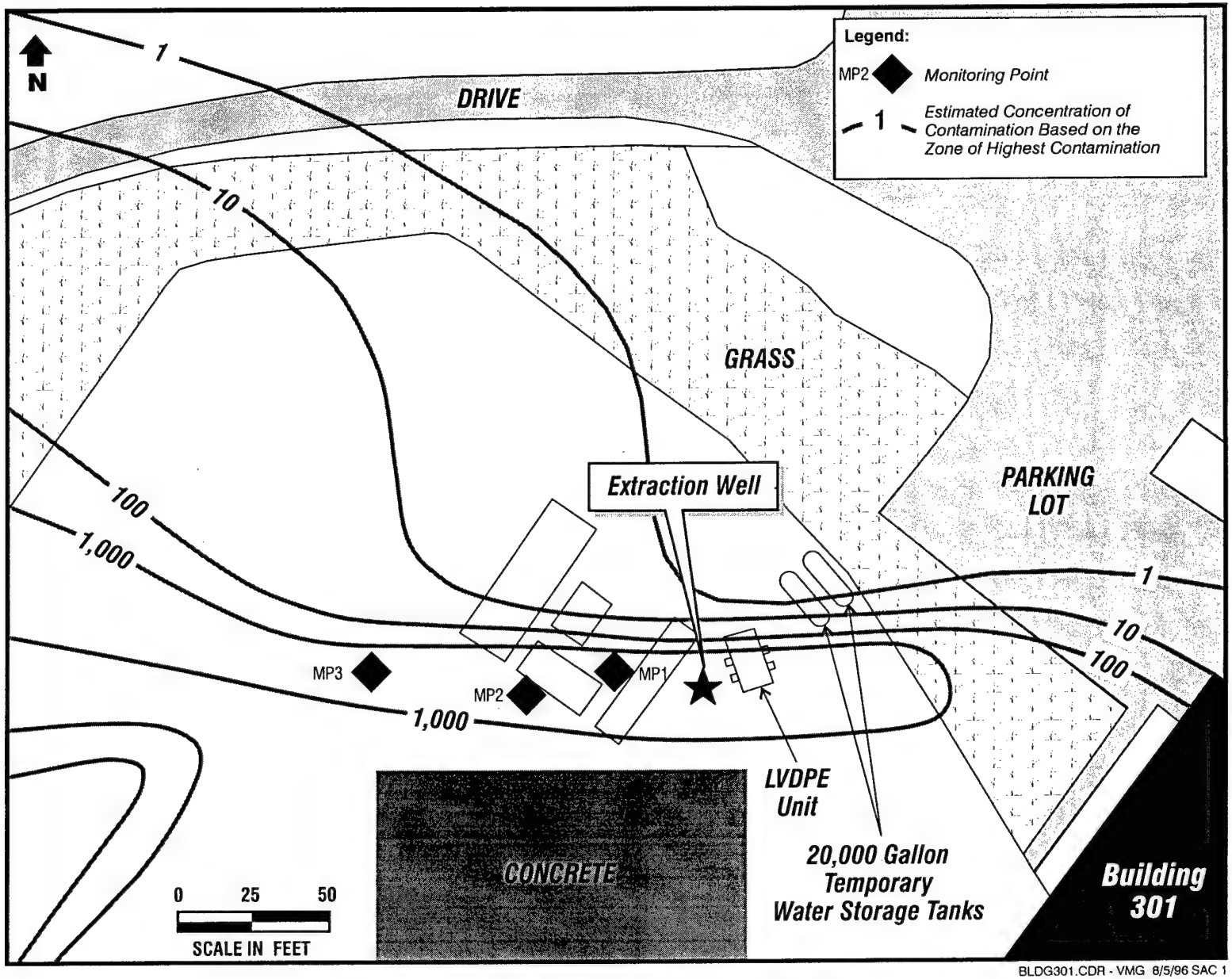
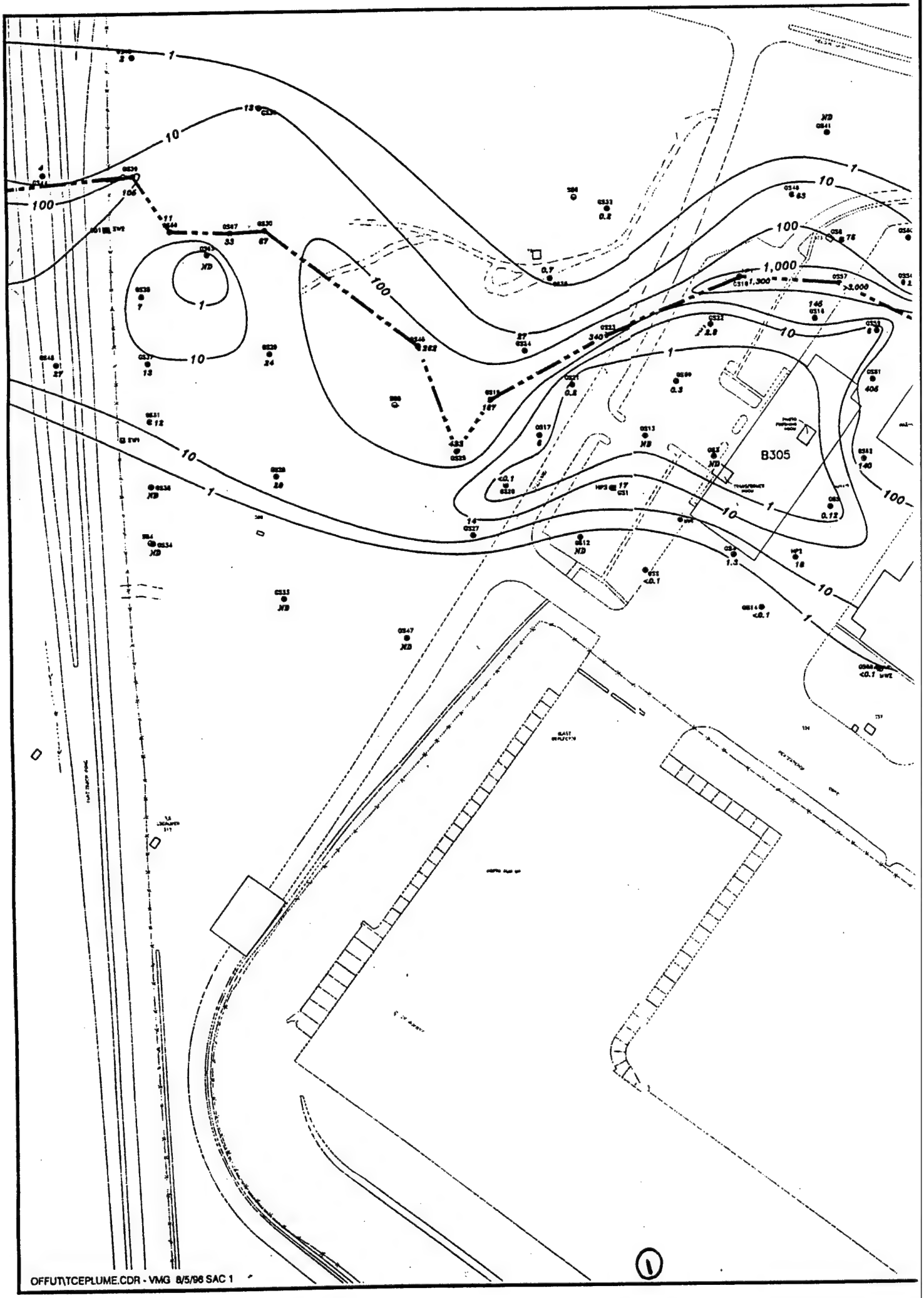


Figure 1-2. Building 301 Site Characteristics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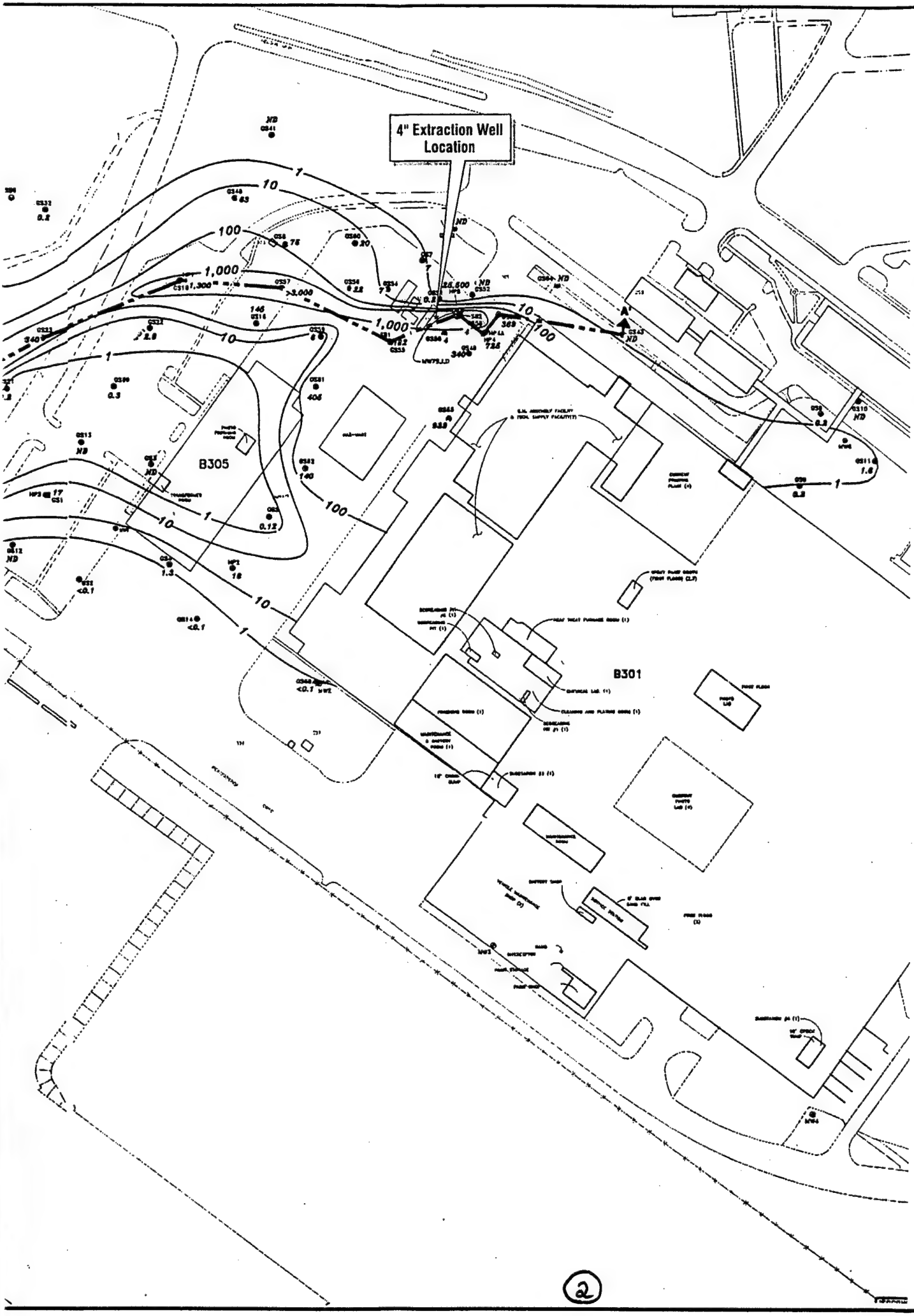

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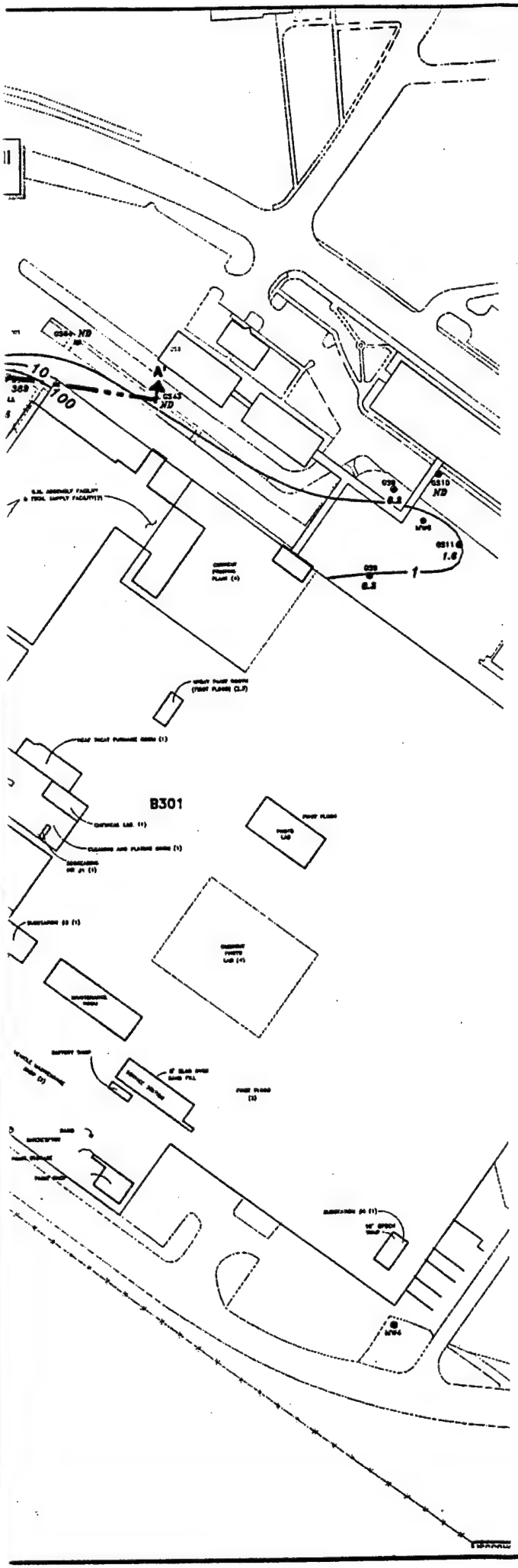


LEGEND

- Fence
- Structure
- Gravel Road or Path
- Paved Road
- Drainage Ditch
- S,I,D — Existing Monitoring Well Location (Shallow, Intermediate or Deep)
- Surface Water Sample Location (SW)
- Existing Sediment Sample Location (SD)
- Soil Boring Location
- GS12 / 4 — Direct Push Water Sample Location with Sample Designation & TCE Concentration (µg/L)
- HP1 / 8 — Hydropunch Water Sample Location with Sample Designation & TCE Concentration (µg/L)
- 1 — Estimated Concentration of Contamination Based on the Zone of Highest Contamination
- *ND* = NonDetect
- A — A' LOCATION OF GEOLOGICAL CROSS-SECTION

N

0 100 200

SCALE IN FEET

Figure 1-3.
Concentration of TCE and Location of Geologic Cross Section A - A' at B301, Offutt Air Force Base, Nebraska

2.0 TEST METHODOLOGY

The pilot-scale test of the LVDPE technology at Building 301, Offutt AFB, consisted of a seven-day test conducted on the newly installed extraction well (B301-EW-1). The test was conducted from 19 to 25 May 1996. The primary volatile organic compounds (VOCs) of interest included TCE and other trace quantities of chlorinated and non-chlorinated VOCs (refer to Appendix C for complete analytical results). All activities (equipment monitoring, sample collection, sample control, and sample analysis) were conducted in accordance with the *Final Vacuum-Enhanced Two-Phase Extraction Pilot-Scale Test Work Plan* (workplan) (Radian, 1996) or the applicable procedures and protocols described in the *Draft Quality Assurance Project Plan Addendum for the Facility 301 Remedial Investigation* (Woodward-Clyde, 1995). The following sections provide a brief discussion on the technological theory, system configuration, sampling and analytical methodology, and management of residuals used during the test.

2.1 MPE Technology Description

The MPE process was developed for the remediation of VOCs and other contaminants in low-to-moderate permeability subsurface formations. The groundwater table is lowered while a vacuum is applied to the extraction well, which increases liquid flow into the well, and extracts vapors from the screened formation. As the water table is lowered, more of the soil formation is exposed to the vacuum, causing an increase in the vapor flow to the well. Since vapor has a much lower effective viscosity than water, it is pulled through the formation at a much higher rate. This vapor flow volatilizes adsorbed and free-phase contaminants and removes them from the liquid phase. In many cases, the MPE process can substantially reduce the overall time needed for site remediation because of the high rate at which liquid, vapor, and adsorbed contaminants are removed from a large volume of soil.

A MPE system can be operated with either a low-vacuum (3 to 12 inches of mercury [in Hg]) or a high-vacuum (18 to 26 in. Hg) configuration. A low-vacuum MPE configuration is most effective when the soil is of moderate permeability with lithologies ranging from sands to silty sands. A high-vacuum MPE configuration is most effective when the soils are of low permeability with lithologies ranging from sandy silts to clays. For high vacuum TPE applications, sites where the groundwater production rate is low (<5 gpm) and the contamination is shallow (<50 feet bgs), TPE is generally most effective. For other high-vacuum sites, DPE is most effective. LVDPE was selected for pilot testing at Building 301 because the portions of the formation ranged from moderate to low permeability. Section 3.0 discusses each of these configurations in greater detail.

2.2 System Configuration

The following subsections describe the use and configuration of the Offutt AFB, Building 301 extraction well and monitoring points.

2.2.1 LVDPE System Setup

The LVDPE setup used at Offutt AFB was a modification of a conventional vacuum extraction system that employs both a vacuum pump and a submersible pump. A sump was created by installing 20 feet of blank casing below the screen interval (90 feet bgs) in a four-inch-diameter

extraction well. A submersible pump, controlled by a high level switch placed at 70 feet bgs and a low level switch at approximately 75 feet bgs in the blank casing, extracted groundwater from the subsurface to be treated with aqueous-phase granulated activated carbon (GAC) at the surface. During pumping, a low-vacuum (10 in. Hg) was applied to the well using a trailer-mounted blower. This applied vacuum increased the liquid flow rate into the well while extracting soil vapor from around the well screen and volatilizing adsorbed soil contaminants. Figure 2-1 illustrates a DPE extraction well configuration, and Figure 2-2 shows a schematic of the LVDPE unit.

2.2.2 Extraction Well and Monitoring Points

The extraction well was located within the 1,000 ppm TCE plume near HP5 where the highest TCE concentraction at the site (25,000 ppb) was identified. The extraction well was installed so that the screen was placed in the highly contaminated zone, yet was still situated above the most permeable portions of the formation. That is, the screen placement depth was selected to capture the highest levels of contamination without drawing large volumes of relatively clean water from high permeability areas of the Glacial Outwash formation.

The drilling log for the extraction well at Building 301(well B301-EW-1) and the well and piezometer completion diagrams are provided as Appendix A. A cross section of the area showing the well and monitoring point locations and screened intervals are provided in Figure 1-3. Monitoring points (MP1, MP2, MP3), consisting of groundwater and vapor piezometers, were installed in three locations to assess the performance of the MPE system. These piezometers were installed using a hollow-stem auger drilling rig in accordance with the well construction portions of the Facility 301 Remedial Investigation documentation (Woodward-Clyde, 1994). Table 2-1 summarizes the characteristics of the well and each of the peizometers.

The groundwater piezometers, used to monitor groundwater drawdown, penetrate the saturated zone and are screened below the static water table between 50 and 65 feet bgs. Each piezometer is constructed of 2-inch diameter schedule 40 polyvinyl chloride (PVC) with 15 feet of 0.010-inch slotted screen. Vapor piezometers, used to monitor the extent and magnitude of vacuum influence, were also installed at each of the three monitoring points. The vapor piezometers are constructed of 1-inch diameter schedule 40 PVC with 5 feet of 0.010-inch slotted screen located above the groundwater table (39 to 44 feet BGS). A plan view of the extraction well and combined vapor and groundwater piezometers is provided in Figure 2-4. Combined groundwater and vapor piezometer construction cross-sections are shown in Figure 2-5. Details of the piezometer installation are also provided in Appendix A.

Table 2-1 Characteristics of Extraction Well and Monitoring Points

Well/ Piezometer ID	Use	Total Depth (Feet bgs)	Screened Interval (Feet bgs)	Distance from Extraction Well (B301-EW-1)
B301-EW-1	Extraction Well	90	50-70	0
MP1 - Vapor	Measure Induced Vacuum	44	39-44	41
MP1 - Liquid	Measure Water Level	65	50-65	41
MP2 - Vapor	Measure Induced Vacuum	44	39-44	67
MP2 - Liquid	Measure Water Level	65	50-65	67
MP3 - Vapor	Measure Induced Vacuum	44	39-44	122
MP3 - Liquid	Measure Water Level	65	50-65	122

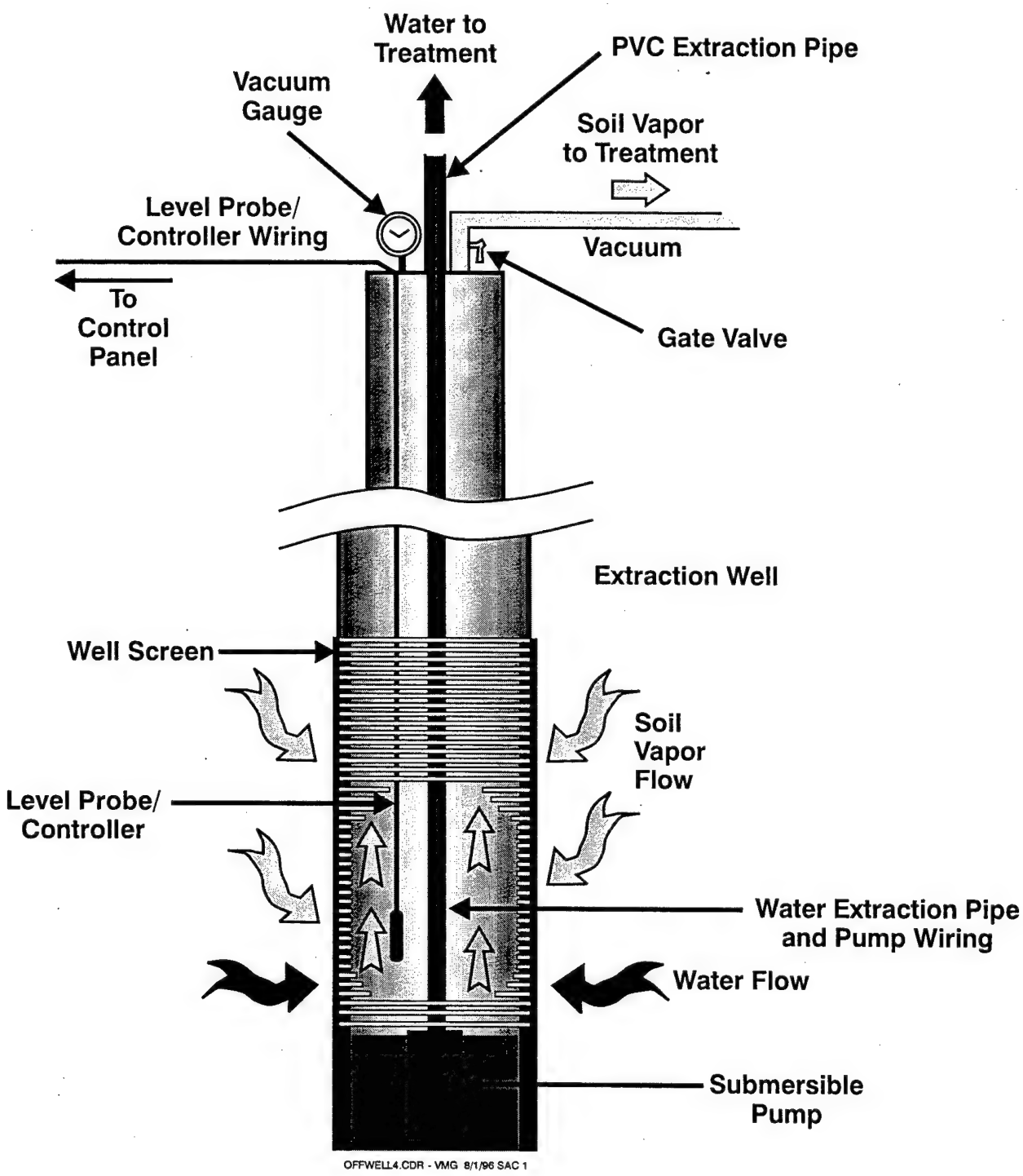


Figure 2-1. DPE Extraction Well Configuration

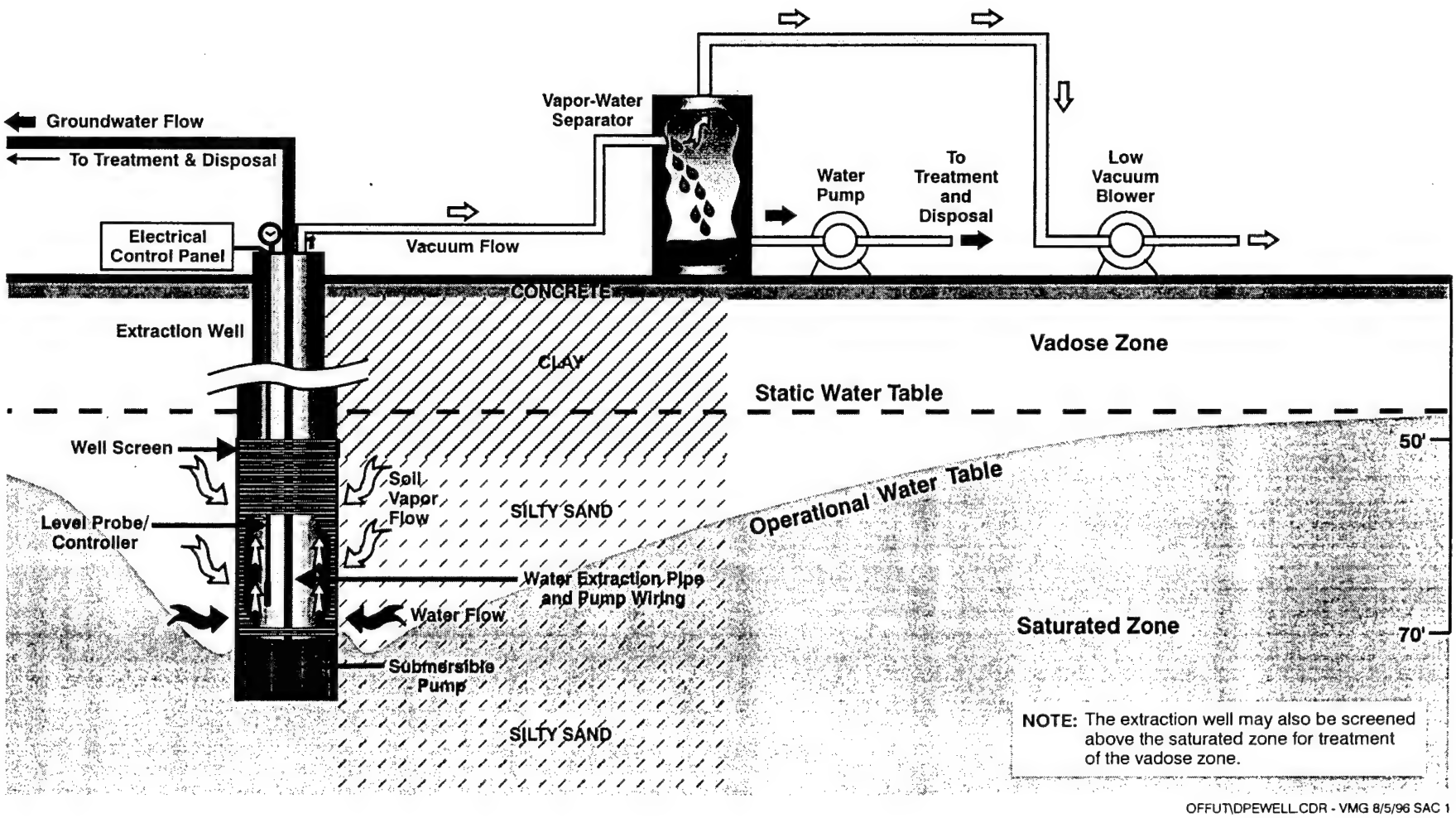
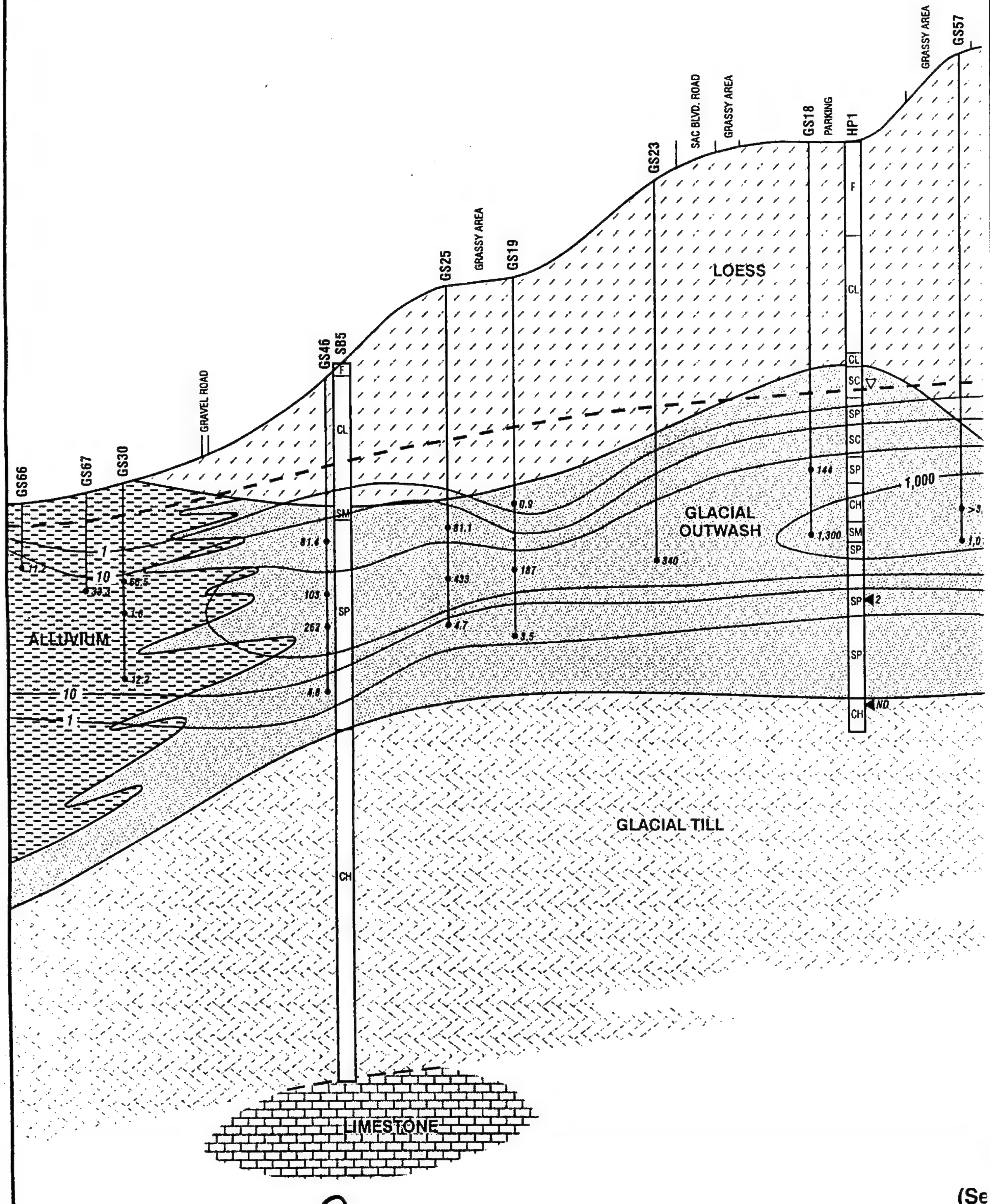


Figure 2-2. LVDPE System Configuration



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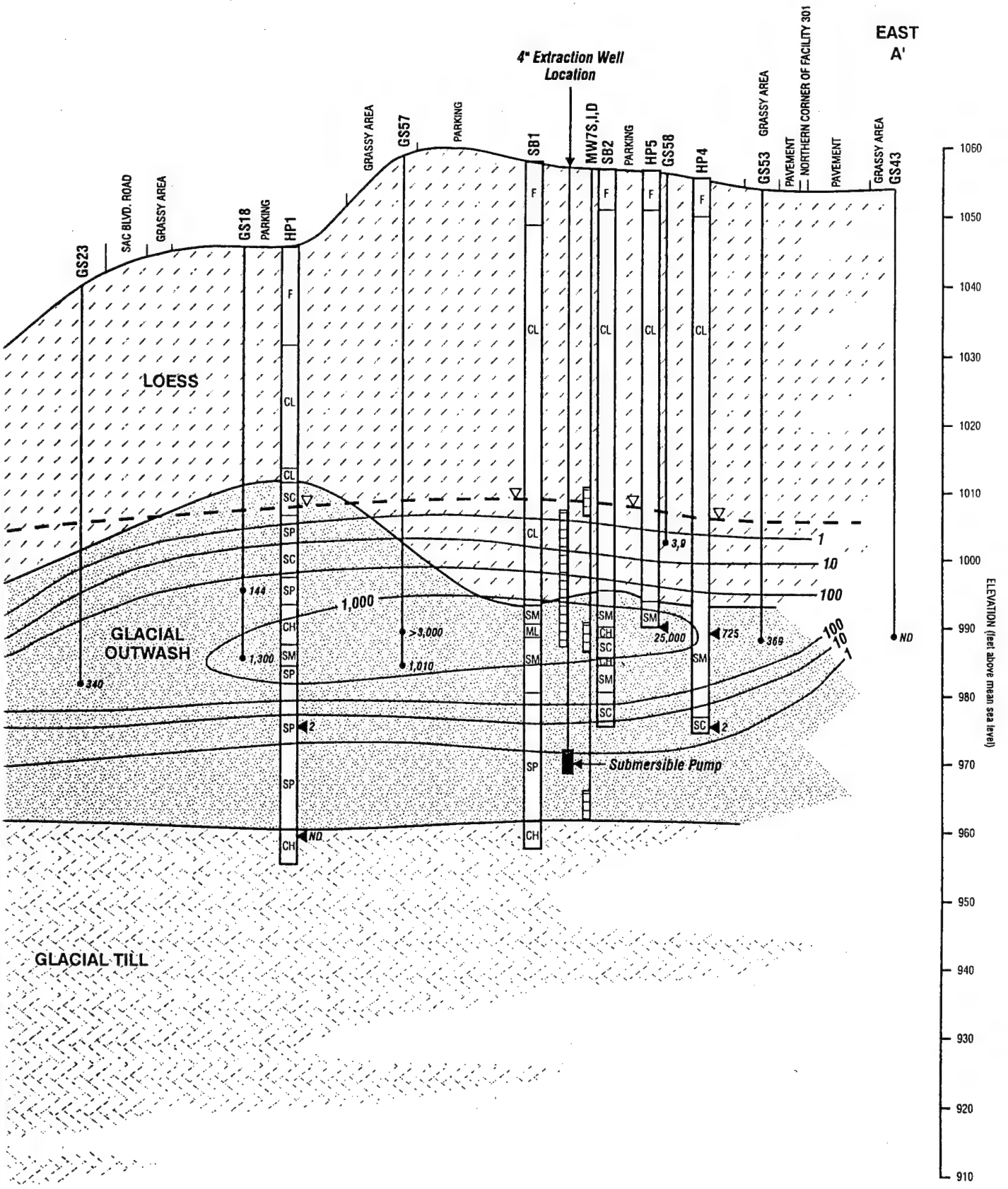
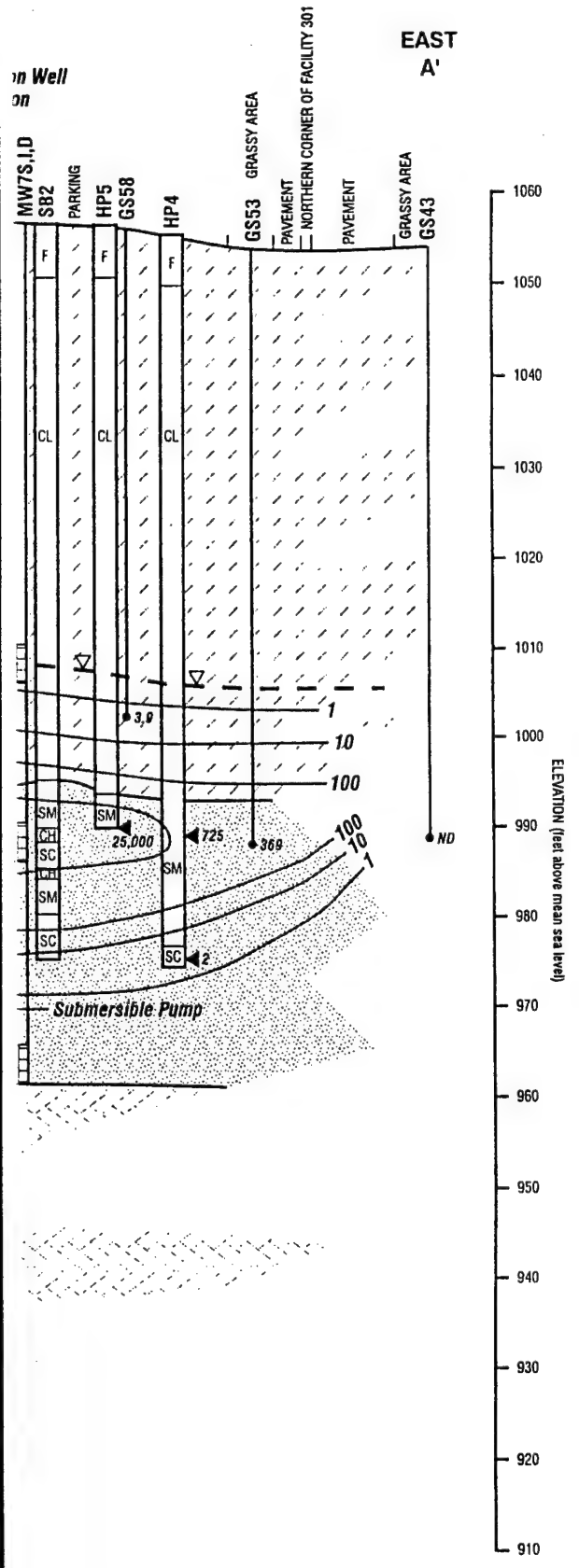


(See Figure 1-3 for Location of Cross Section A - A')



GEOGRAPHIC HYDROSTATIC UNITS

- Upland Profile Loess
- Upland Profile Glacial Outwash
- Upland Profile Clay - Rich Glacial Till
- Papillion Creek Profile Alluvial Clay and Silt
- Bedrock - Western Interior Plains Confining Systems

BORING LOG NOTATIONS

F = Fill

CH = Topsoil, Clay, Till

ML = Clayey Silt, Silt

CL = Silty Clay, Sandy Clay, Alluvial Silty Clay

SM = Silty Sand

SP = Sand

SC = Clayey Sand

LEGEND

- Estimated Groundwater Surface from Soil Borings
- 100 — Isoconcentration Contour of TCE (mg/L)
- ● 369 — Geoprobe Water Sample, Value Represents Concentration (mg/L)
- ◀ 2 — Hydropunch Water Sample, Value Represents Concentration (mg/L)
- Monitoring Well Screen Interval

N

0 100 200

HORIZONTAL SCALE IN FEET

0 10 20

VERTICAL SCALE IN FEET

Figure 2-3.
TCE Concentration and TCE Concentration Along Geologic Cross Section A - A'
Facility B301, Offutt Air Force Base, Nebraska

r Location of Cross Section A - A')

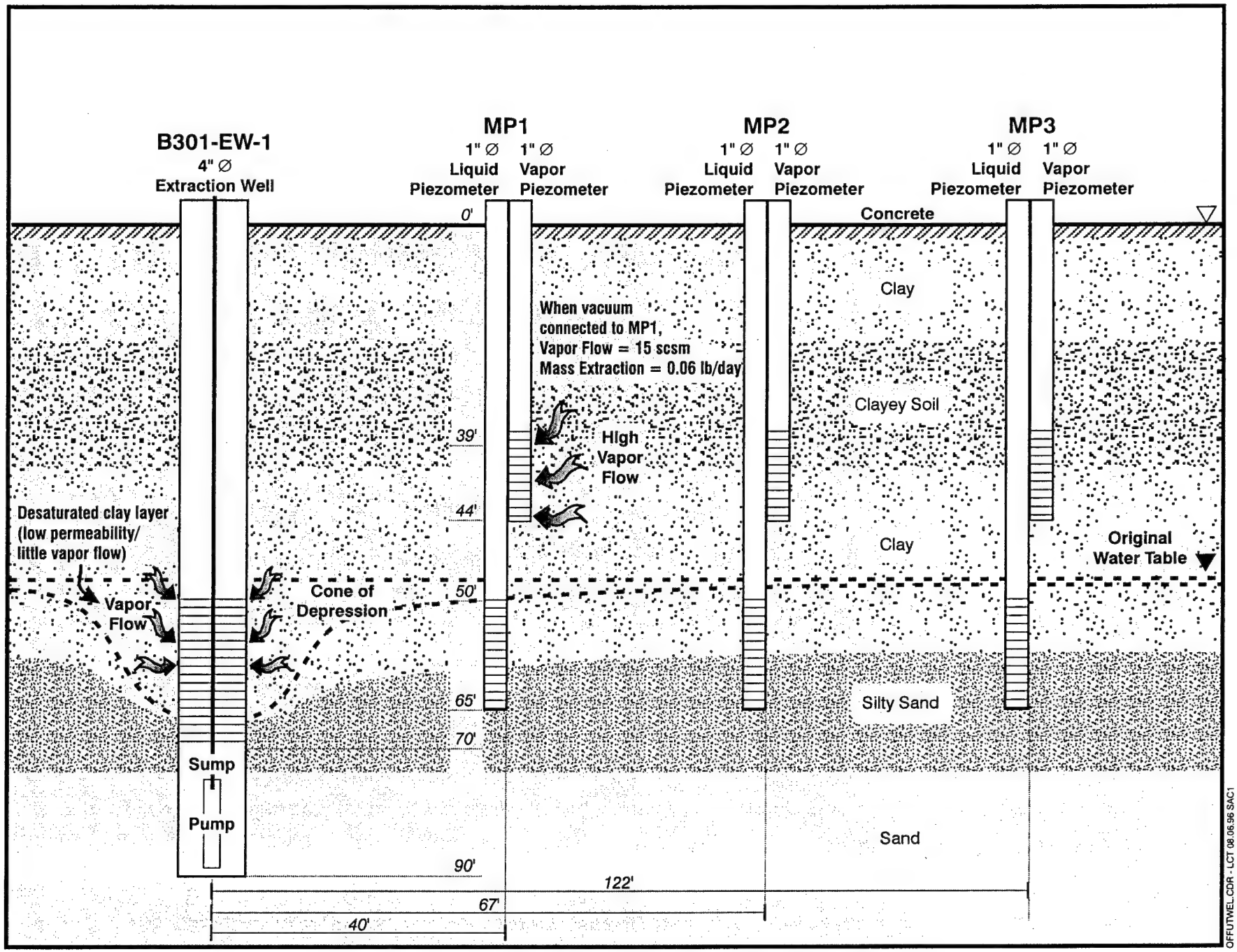


Figure 2-4. Building 301 LVDPE Pilot Test Site Cross Section

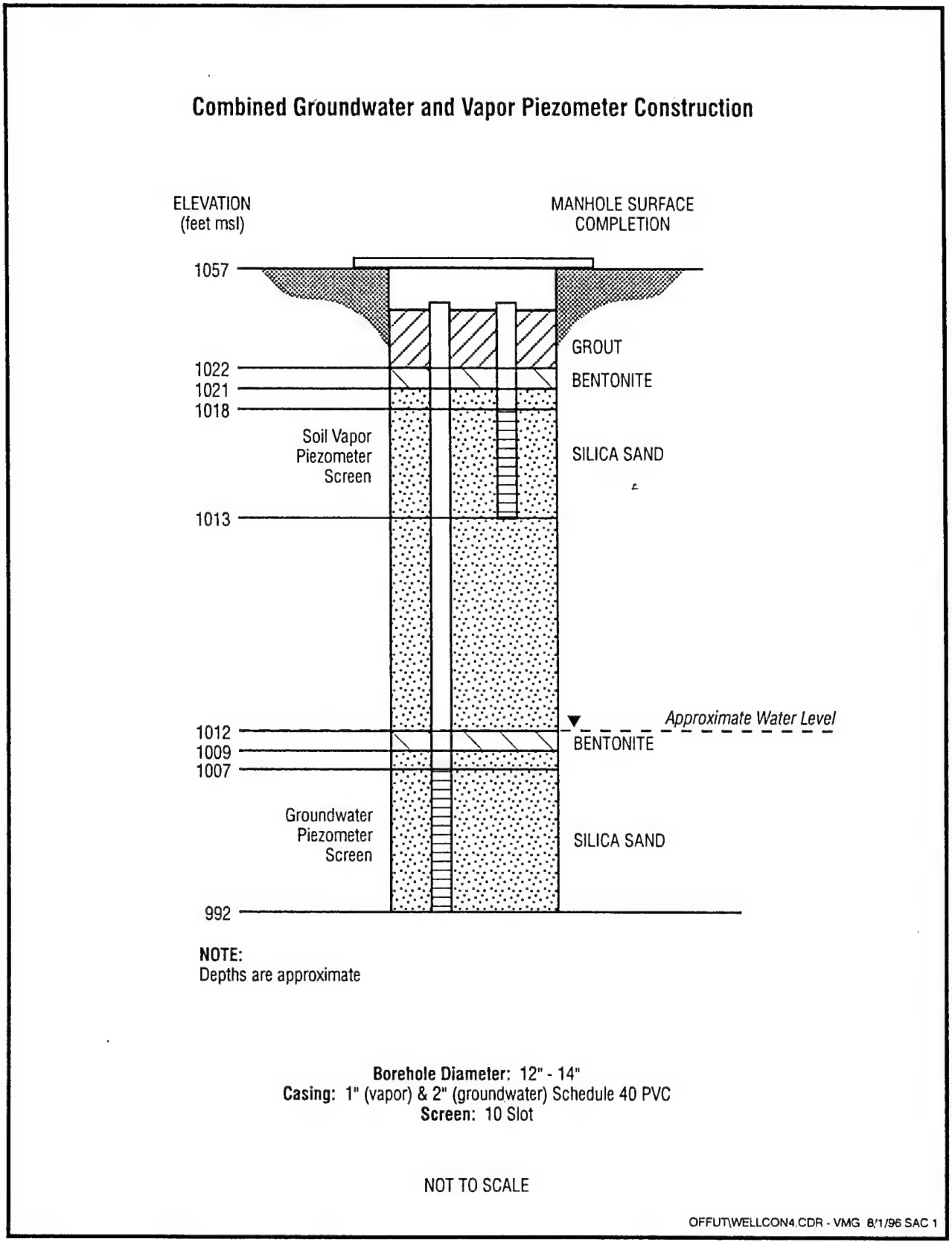


Figure 2-5. Groundwater Piezometer and Vapor Probe Construction Cross-Section

2.3 Sampling and Analytical Methodologies

All sampling and analytical procedures (except where noted) were conducted in accordance with procedures and protocols described in the workplan (Radian, 1996). The sampling frequencies for soil, vapor, groundwater, and related samples collected during the study are summarized in Table 5-3 of the workplan.

2.3.1 Sampling Methodology

System parameters and several extracted vapor and groundwater conditions were measured using vacuum and temperature gauges included on the LVDPE trailer. In addition, the groundwater drawdown in the observation wells was measured using a water level meter, the induced vacuum was measured using Magnehelic® gauges, the groundwater rate of extraction was measured using a totalizing flow meter, and the soil vapor flow rate was measured using a pitot tube. Data collected during the test were recorded on field data sheets provided in Appendix B.

During the operation of the system, extracted groundwater samples were collected directly from the flexible hose carrying extracted groundwater to the activated carbon. All groundwater samples were collected in volatile organics analysis (VOA) vials, preserved with hydrochloric acid (HCl), and placed on ice and stored in a cooler until shipped to Radian's analytical laboratory in Austin, Texas.

All vapor samples were collected using disposable syringes and evacuated vials provided by Microseeps Inc. The samples were stored at ambient conditions until shipped to the Microseeps laboratory for analysis.

Quality control samples were also collected during sample collection activities. Duplicate water and vapor samples were collected at a 10% frequency by the methods previously described. Trip blanks accompanied all samples throughout shipping and handling.

One composite carbon sample was collected from the aqueous phase GAC for profiling purposes. This sample was analyzed by Weststates Carbon Laboratory.

An organic vapor meter (OVM) was used to measure organic vapor concentrations in the air or headspace surrounding the drummed drill cuttings. This was conducted for profiling purposes to determine waste characteristics for disposal. Appendix C contains the results of these headspace measurements.

As a separate effort, Radian also collected and analyzed groundwater samples using the Accusensor. The Accusensor, developed by ORS Environmental Systems, is a portable instrument designed to provide real-time analysis of TCE in water. This effort was not conducted as part of our scope of work, but a brief overview of the results are provided in Appendix D.

2.3.2 Analytical Methodology

Extracted groundwater samples were analyzed for VOCs by Environmental Protection Agency (EPA) Method SW8260. Soil vapor samples were analyzed for VOCs by Microseeps Analytical Method AM 4.02. GAC samples were analyzed by the 11 Resource Conservation and Recovery Act (RCRA) test, as well as Method SW8010/SW8020. The list of methods included in the 11 RCRA tests, along with the analytical results for the GAC, are provided in Appendix D. Treated

groundwater samples were analyzed for VOCs and ignitability to determine if the water was within the discharge limits for the sanitary sewer.

The analytical data underwent a quality assurance/quality control (QA/QC) review which concluded that all reported results are acceptable for the purpose of this test. The analytical results and the Data Quality Summary are provided in Appendix G.

2.4 Residuals Management

The following residuals were generated during the LVDPE activities:

- Two drums of aqueous-phase GAC;
- Drill cuttings from piezometer and vapor probe installation;
- Purged water and decontamination water from sampling, well development, and well installation activities; and
- Extracted groundwater from the LVDPE activities.

The GAC drums are scheduled for disposal following profiling activities. The GAC will be shipped as hazardous waste to a permitted carbon regeneration facility for reactivation. This shipment will be manifested by Offutt AFB.

The drill cuttings were placed in drums for temporary storage at the site. Measurements of the organic vapor content were collected from each drum before transporting them to the drum storage yard. Based on these measurements, the Base then determined that the contents were not hazardous. Eventually the soil will be used for additional landfill cover.

Purged water and equipment decontamination water from well installation activities was temporarily stored in 55-gallon drums. The purge and decontamination water was then treated on site using GAC and stored in a large 20,000 gallon tank with the extracted groundwater.

All water extracted during the LVDPE test was treated using aqueous-phase GAC and then temporarily stored in one of two 20,000-gallon tanks. Following approval of the wastewater analytical results by the City of Omaha and the Base environmental staff, the treated groundwater and purge water was discharged into the Base sanitary sewer system.

3.0 TEST RESULTS AND CONCLUSIONS

This section presents the results of the pilot-scale test including: the system operation times; the groundwater extraction rate, radius of influence, and VOC recovery; and the soil vapor extraction rate, radius of influence, and VOC recovery.

3.1 Summary of Results

The pilot-scale LVDPE test met the objectives to verify and expand the draft Remedy Profile for MPE. It also met the objectives related to obtaining site-specific information including contaminant concentrations, flow rates, radii of influence, and VOC mass extraction rates.

The test results indicate that HVDPE, not LVDPE, would be an effective technology for hot-spot remediation at the site.

Table 3-1 summarizes the results of the Offutt LVDPE pilot scale test.

Table 3-1

Summary of LVDPE Pilot Study Results

Parameter	Groundwater	Soil Vapor	Total
Extraction Rate	3.1 gpm	3.0 scfm	NA
Radius of Influence	>122 ft. (200 ft. by extrapolation)	NA [a]	NA
Avg. VOC Removal Rate	0.69 lbs/day	0.014 lbs/day	0.70 lbs/day
Avg. TCE Removal Rate	0.63 lbs/day	0.013 lbs/day	0.64 lbs/day
Total Mass of VOCs Removed	4.75 lbs	0.083 lbs	4.83 lbs
Total Mass of TCE Removed	4.34 lbs	0.081 lbs	4.42 lbs

[a] Radius of influence results for vapor are inconclusive
scfm = standard cubic feet per minute
lbs = pounds
gpm = gallons per minute
NA = not applicable

At the beginning of the LVDPE test, Radian collected groundwater samples from the extraction well and from the liquid piezometer (MP2) approximately 70 feet west of the extraction well. The TCE concentrations detected in the samples ranged from 22,700 micrograms per liter (µg/L) in the extraction well to 1,260 µg/L in the liquid piezometer. This suggests that the TCE concentration attenuates to the west of the Building 301 extraction well.

The data available for the Building 301 site prior to the test indicated that the site was moderate to low-permeability and would be suitable for LVDPE with high VOC concentrations. However, the formation permeability was lower than expected given the available information on the

vadose zone permeability and produced low vapor flow. This low permeability puts the site at the bounds of the LVDPE remedy profile, and suggests that a HVDPE configuration may be more favorable. Table 3-2 presents the LVDPE and HVDPE remedy profiles in comparison to the actual Building 301 site characteristics observed.

Table 3-2

MPE Technology Remedy Profiles

Criteria Parameter	TPE	LVDPE Profile	HVDPE Profile	Offutt AFB, Building 301 Site
Contaminant:	Halogenated VOCs	Halogenated VOCs	Halogenated VOCs	Halogenated VOCs: primarily trichloroethylene (TCE)
Contamination location:	Saturated zone alone or saturated and vadose zones combined	Saturated zone alone or saturated and vadose zones combined	Saturated zone alone or saturated and vadose zones combined	Saturated and vadose zone
Contaminant concentration:	significantly greater than MCLs	significantly greater than MCLs	significantly greater than MCLs	Significantly greater than MCLs for TCE
Henry's Law Constant of majority of contaminants:	> 0.01 at 20 C° (dimension-less)[1]	> 0.01 at 20 C° (dimensionless)[1]	> 0.01 at 20 C° (dimensionless)[1]	0.37 at 20°C for TCE
Vapor pressure of majority of contaminants:	> 1.0 mm Hg at 20 C°	> 1.0 mm Hg at 20 C°	> 1.0 mm Hg at 20 C°	58 mm Hg at 20°C
Groundwater production rate:	<5 gpm	> 2 gpm	No limitations	3 gpm average with low vacuum
Minimum depth of contamination in vadose zone (if targeted):	> 5 feet bgs	> 5 feet bgs	> 5 feet bgs	50 to 70 feet
Lithology of saturated zone:	Silty sand to clay	Sands to silty sands	Silty sand to clay	Silty sand to clay
Average air permeability of vadose zone	Low permeability (<$1x10^{-3}$ darcy)	Moderate permeabiilty ($1x10^{-3}$ to .1 darcy)	Low permeability (<$1 x 10^{-3}$ darcy)	Low permeability
Maximum depth of contamination in saturated zone	<50 feet bgs	No limitations	No limitations	50 to 70 feet bgs

As a result of the low permeability of the clay; the soil vapor flow rate, the vapor radius of influence, and the contaminant mass extracted from the vapor were much lower than expected. These parameters are expected to increase to an acceptable level given a higher vacuum because:

- The soil vapor extraction rate increased when the vacuum level increased (see Section 3.4.1).
- The soil vapor extraction rate increased during the test as the dewatered soils dried out, and
- The lithology and low permeability matches the HVDPE profile,

The results and conclusions of the test are discussed in more detail in the following subsections.

3.2 System Operation

The system set-up was completed on 18 May 1996, and the test began at 10:00 A.M. on 19 May 1996. It was operated continuously for seven days, with only brief shut-downs to reconfigure small portions of the apparatus.

Physical and analytical data were analyzed to determine the following:

- TCE and total VOC concentrations in groundwater;
- The major VOC constituents in the vapor and groundwater streams;
- Average groundwater and soil vapor extraction rates;
- The radius of influence and the relationship between distance, groundwater drawdown, and induced vacuum;
- Average TCE and total VOC extraction rates and total pounds removed; and
- The optimum operational setup and predicted performance.

Section 3.5 summarizes the results achieved using the LVDPE system at Building 301. The data calculations for the LVDPE system parameters are provided in Appendix G.

3.3 Groundwater Extraction Rate, Radius of Influence, and VOC Recovery

The following sections describe the groundwater radius of influence, rate of extraction, and VOC recovery observed during the LVDPE test.

3.3.1 Groundwater Extraction Rate

The groundwater extraction rate was measured throughout the duration of the test using a totalizing water flow meter. The total duration of the test was 148 hours, over which time approximately 27,000 gallons of groundwater were pumped from the extraction well and treated. The rate of extraction was consistently close to 3.0 gallons per minute (gpm), with a final average rate of 3.1 gpm. The groundwater extraction rate is plotted on Figure 3-1.

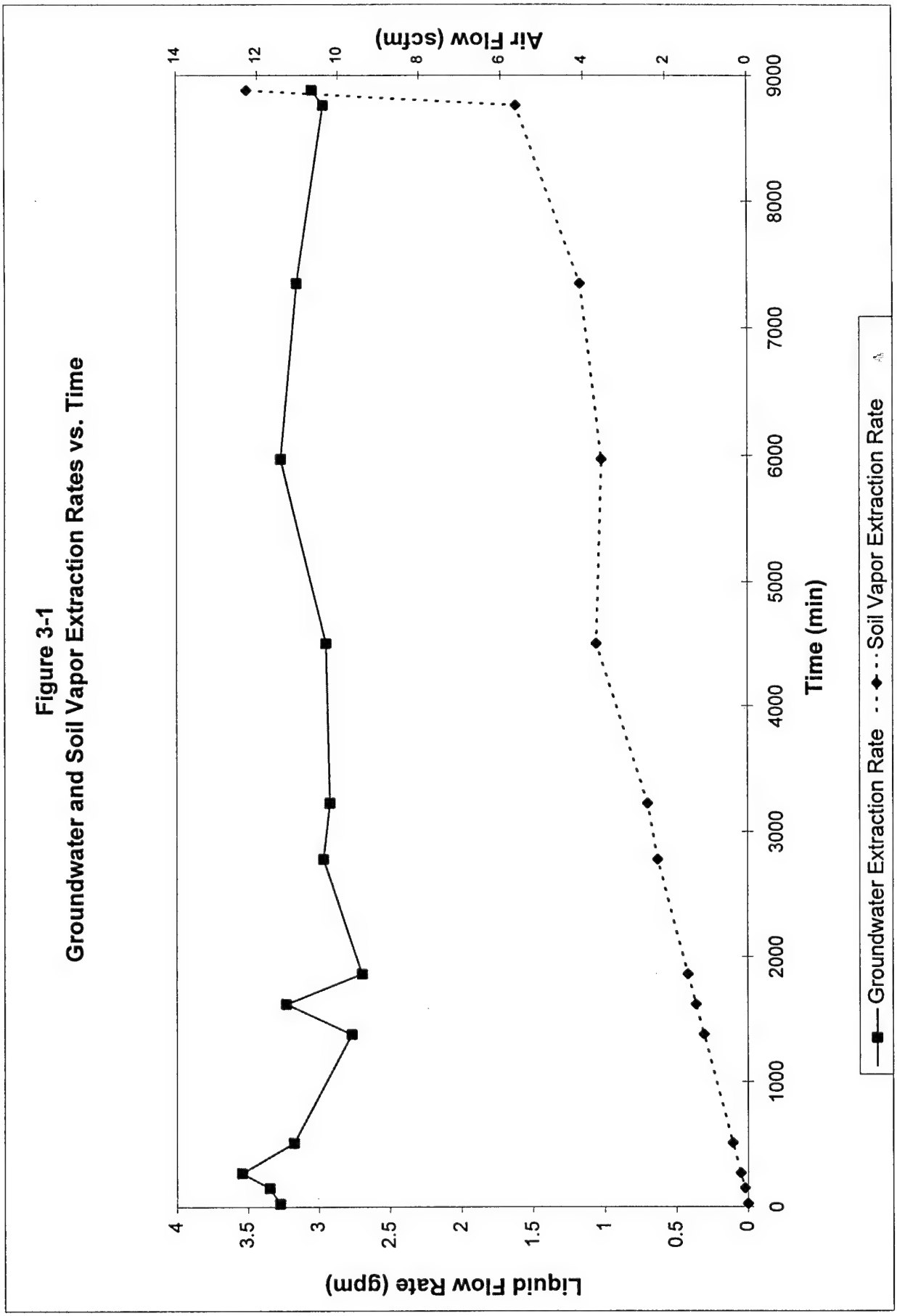


Figure 3-1
Groundwater and Soil Vapor Extraction Rates vs. Time
Liquid Flow Rate (gpm)
Air Flow (scfm)
Time (min)
Groundwater Extraction Rate
Soil Vapor Extraction Rate
0
0.5
1
1.5
2
2.5
3
3.5
4
0
2
4
6
8
10
12
14
0
1000
2000
3000
4000
5000
6000
7000
8000
9000

At the conclusion of the test, the vacuum was shut off to determine the effect of the 10 in. Hg vacuum applied to the well on the groundwater extraction rate. After approximately 2.5 hours, the extraction rate had dropped from 3.2 to 1.9 gpm, well below any previously recorded value. Figure 3-2 illustrates the decreasing extraction rate after the vacuum was shut off. The extrapolated natural groundwater production rate was determined to be between 1 and 1.5 gpm.

3.3.2 Groundwater Radius of Influence

Water levels in each of the three piezometers showed a sharp decrease initially, and a small decreasing trend throughout the remainder of the test, indicating that the aquifer draw down was approaching a steady state. Figure 3-3 illustrates the groundwater draw down over time for each of the three monitoring points (MP1, MP2, MP3).

At the conclusion of the test, the water table was drawn down approximately 0.3 feet at MP3, located 122 feet to the northwest of the extraction well. This information, and the water levels at MP1 and MP2, were used to extrapolate the radius of influence to approximately 200 feet beyond the extraction well, as shown on Figure 3-4.

3.3.3 Groundwater VOC Recovery

TCE, cis-1,2-dichloroethene, and methylene chloride were the primary contaminants found in the groundwater at the site. The VOC concentrations in the groundwater were highest at the very beginning of the test, dropped sharply the first day, then increased and stabilized to a concentration of approximately 10,000 µg/L on the second.

Table 3-3 is a general summary of the results for the VOCs detected in the groundwater samples collected during the test. A complete listing of the analytical results is provided in Appendix F.

Table 3-3 Groundwater VOC Recovery Summary

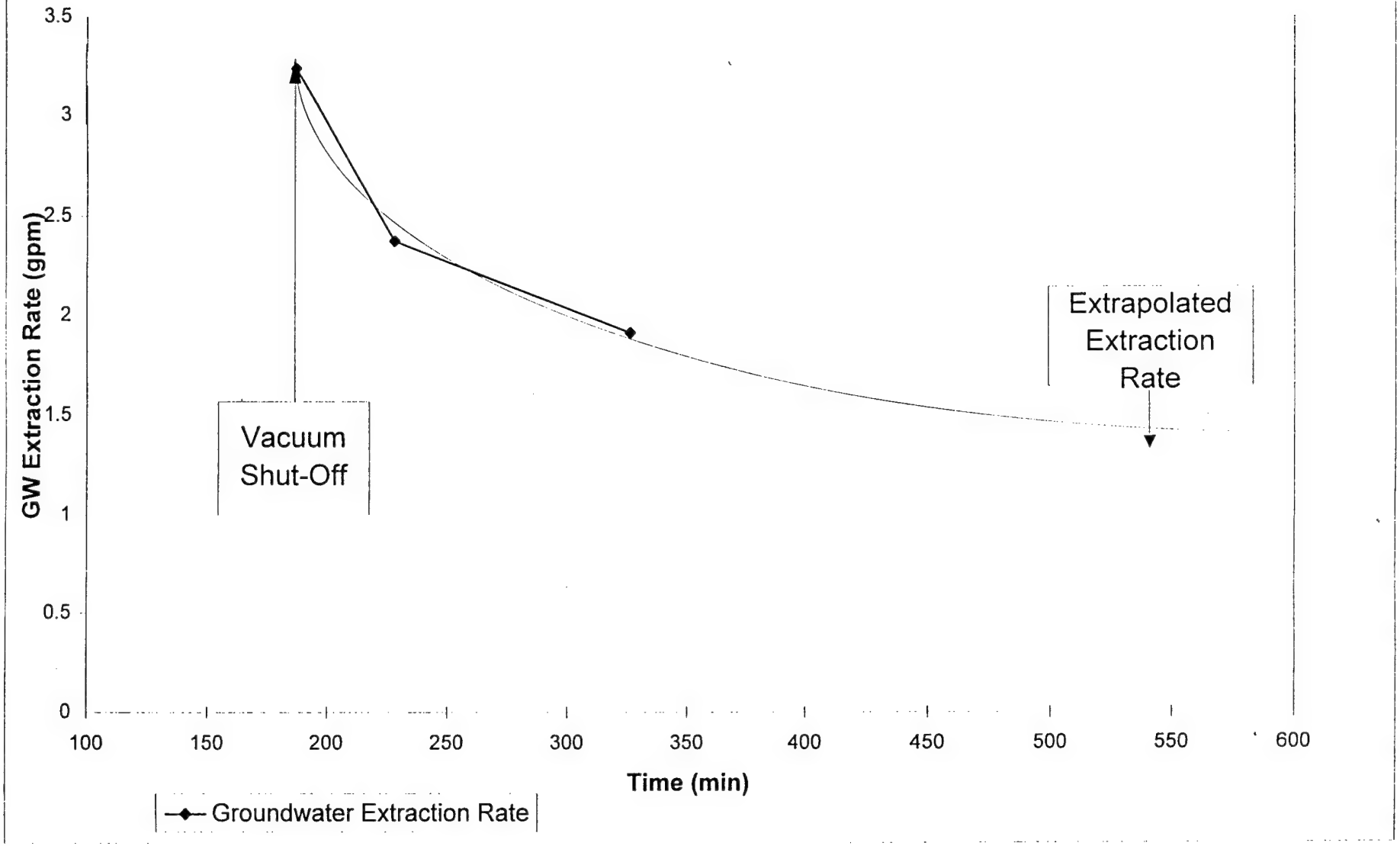
Groundwater:	TCE	Total VOCs
Pre-test Concentration (µg/L)	22,700	24,600
Post-test Concentration (µg/L)	10,700	11,500
Average Concentration (µg/L)	16,900	18,500
Average Removal Rate (lbs/day)	0.63	0.69
Total Mass Removed (lbs)	4.34	4.75

lbs = pounds
TCE = trichloroethlene
µg/L = micrograms per liter
VOCs= volatile organic compounds

3.4 Soil Vapor Extraction Rate, Radius of Influence, and VOC Recovery

The following sections describe the soil vapor extraction rate and the vapor radius of influence noticed during the LVDPE test.

Figure 3-2
No-Vacuum Groundwater Extraction Test



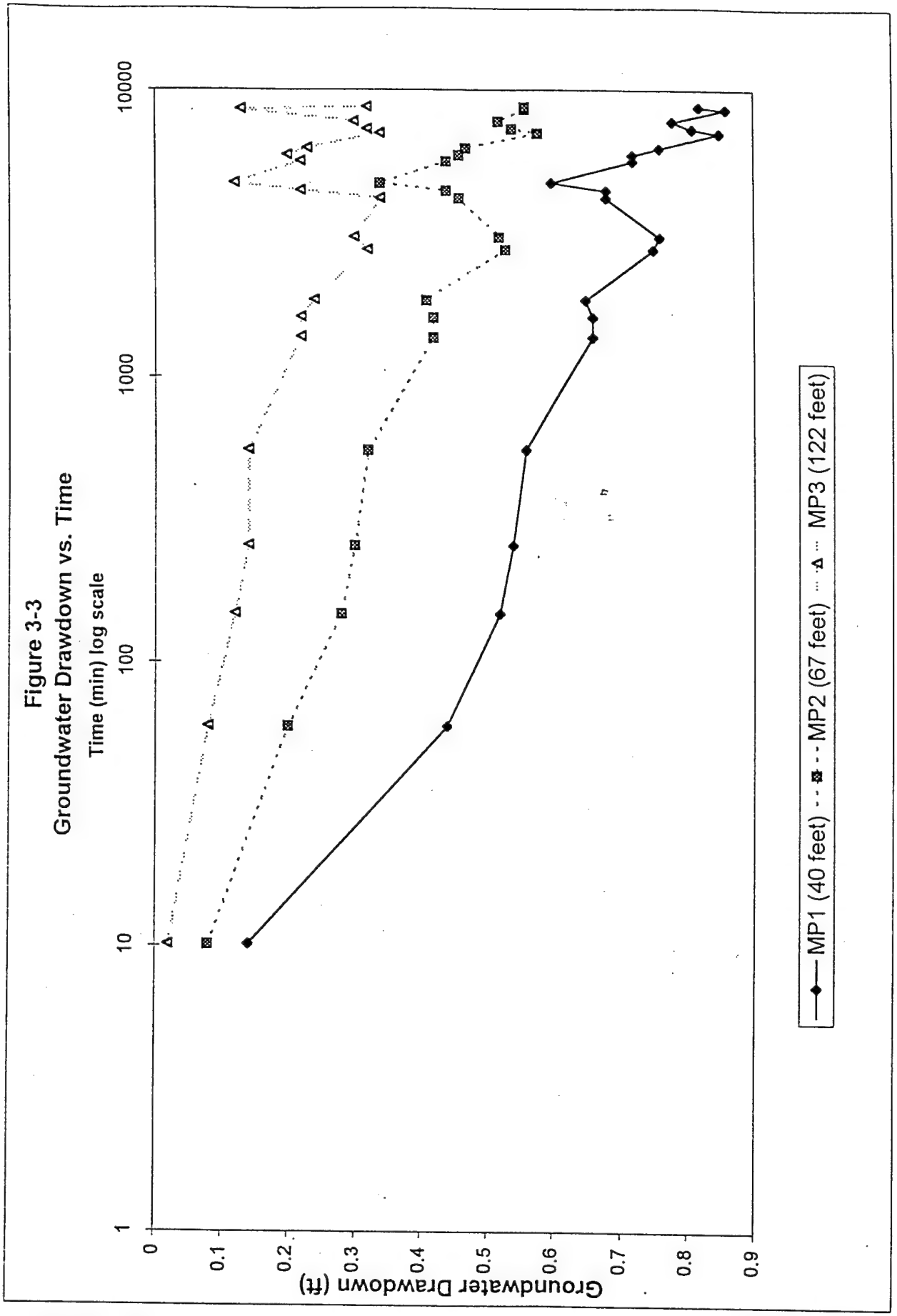
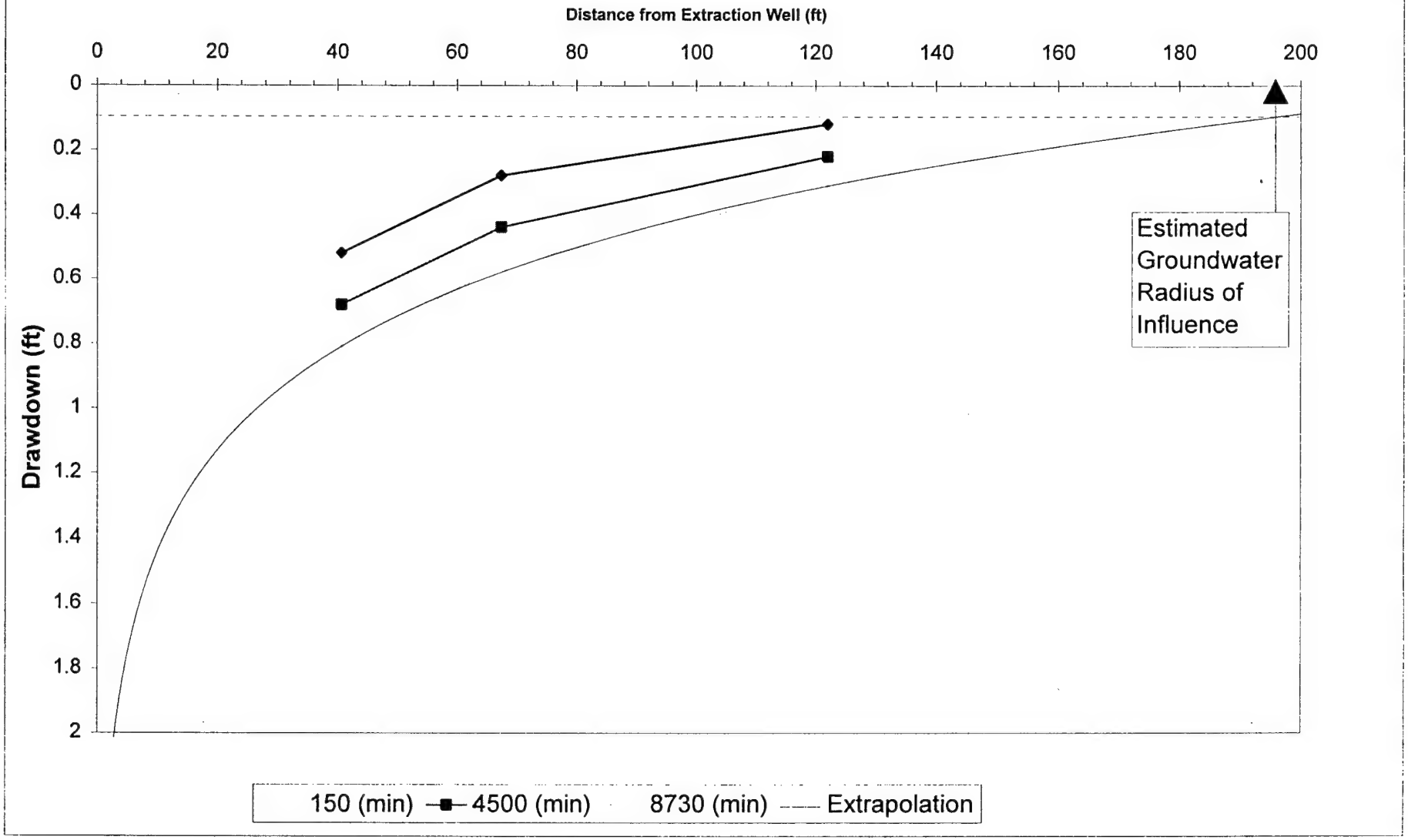


Figure 3-3
Groundwater Drawdown vs. Time
Time (min) log scale
Groundwater Drawdown (ft)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
10
100
1000
10000
MP1 (40 feet)
MP2 (67 feet)
MP3 (122 feet)

Figure 3-4
Groundwater Drawdown vs. Distance Over Time



3.4.1 Soil Vapor Extraction Rate

The pitot tube used to measure the vapor flow rate was not operational during the first 70 hours of the test, and therefore, actual vapor flow measurements during this time period are not available. However, an average vapor extraction rate has been computed based on other measurements including total air flow (formation flow plus bleed air), contaminant concentrations in the vapor phase, and formation air flow data collected during the remainder of the test.

The average soil vapor extraction rate over the duration of the test computed to be at 3.0 standard cubic feet per minute (scfm). Although the rate did fluctuate, an increasing trend was apparent, and there was a noticeable increase in flow during the last day of testing. In fact, the average soil vapor extraction rate over the last 16 hours was 7.5 scfm.

On day five, a vacuum (10 in. Hg) was applied to the one-inch-diameter vapor piezometer at MP1 to test the soil-vapor flow rate in the shallow unsaturated clay layer at 40 to 45 feet bgs. A rotometer indicated a vapor flow rate of approximately 15 scfm, significantly higher than that from the desaturated clay/silty sand layer at 50 to 70 feet bgs. This suggests that the flow rate was not inhibited by the clay layer itself, but rather by the residual water content within the previously saturated portion of the clay. That is, water in the pore space of the clay (from 40 to 60 feet bgs) prohibited air from entering the deeper more porous silty sand layer (60 to 75 feet bgs). Figure 2-4 illustrates this situation. Dewatering of the saturated clay took longer because of the lower permeability and the effects of dewatering were not seen until day seven (when the flow rate began to increase). Given more time, it is likely that the DPE system would have dewatered the clay layer, opened previously saturated pore spaces, and increased the flow rate substantially.

On day seven of the test, Radian conducted a vacuum step-up test. The vacuum was increased from 5 to 10 to 15 in. Hg, and the corresponding flow rates were measured and plotted (see Figure 3-5). This flow data was then extrapolated to a vacuum level similar to that of a HVDPE configuration (25 in. Hg). Based on these data points, it appears that by increasing the vacuum to approximately 25 in Hg, the soil vapor extraction rate will increase to at least 14 scfm. However, given more time and steady state conditions, this flow rate is expected to be greater.

The TCE concentration measured in the soil vapor (OFPT-EV05-100) during the time period in which MP1 was connected to the vacuum was almost four times higher than in any other soil vapor sample collected during the test. The TCE mass removal rate was 0.06 lbs/day, which is greater than four times the average. This suggests that the overall mass removal rate would increase significantly given a higher soil vapor flow rate.

3.4.2 Soil Vapor Radius of Influence

At times during the pilot test, vapor piezometer readings indicated a slight vacuum influence on the soil. However, Figure 3-6 of the vapor piezometer readings shows no apparent trends or correlations. It appears that there was no vacuum influence at the vapor piezometers, indicating that the soil vapor radius of influence was less than 40 feet from the extraction well.

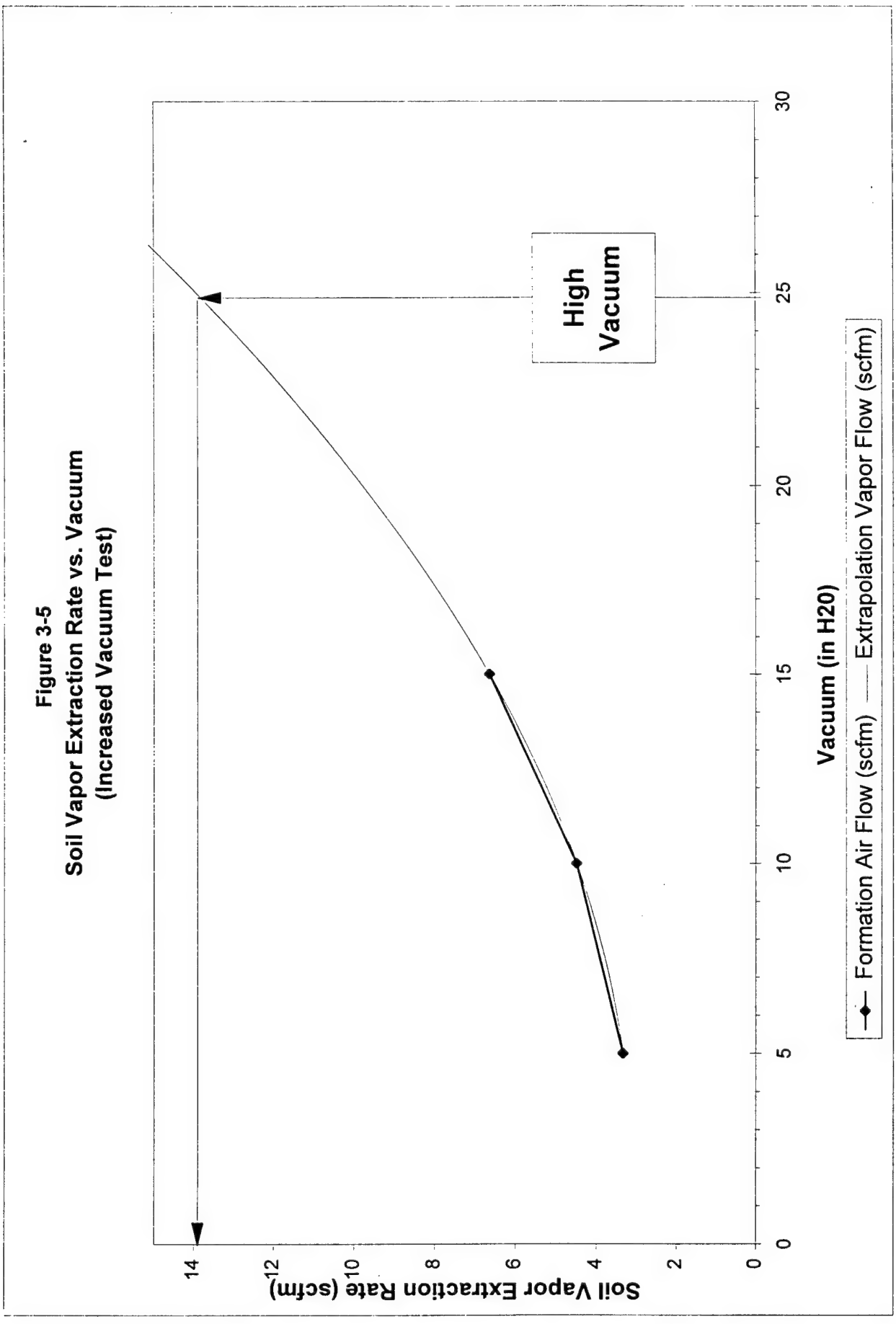


Figure 3-5
Soil Vapor Extraction Rate vs. Vacuum
(Increased Vacuum Test)
Soil Vapor Extraction Rate (scfm)
0
2
4
6
8
10
12
14
0
5
10
15
20
25
30
Vacuum (in H20)
High Vacuum
Formation Air Flow (scfm)
Extrapolation Vapor Flow (scfm)

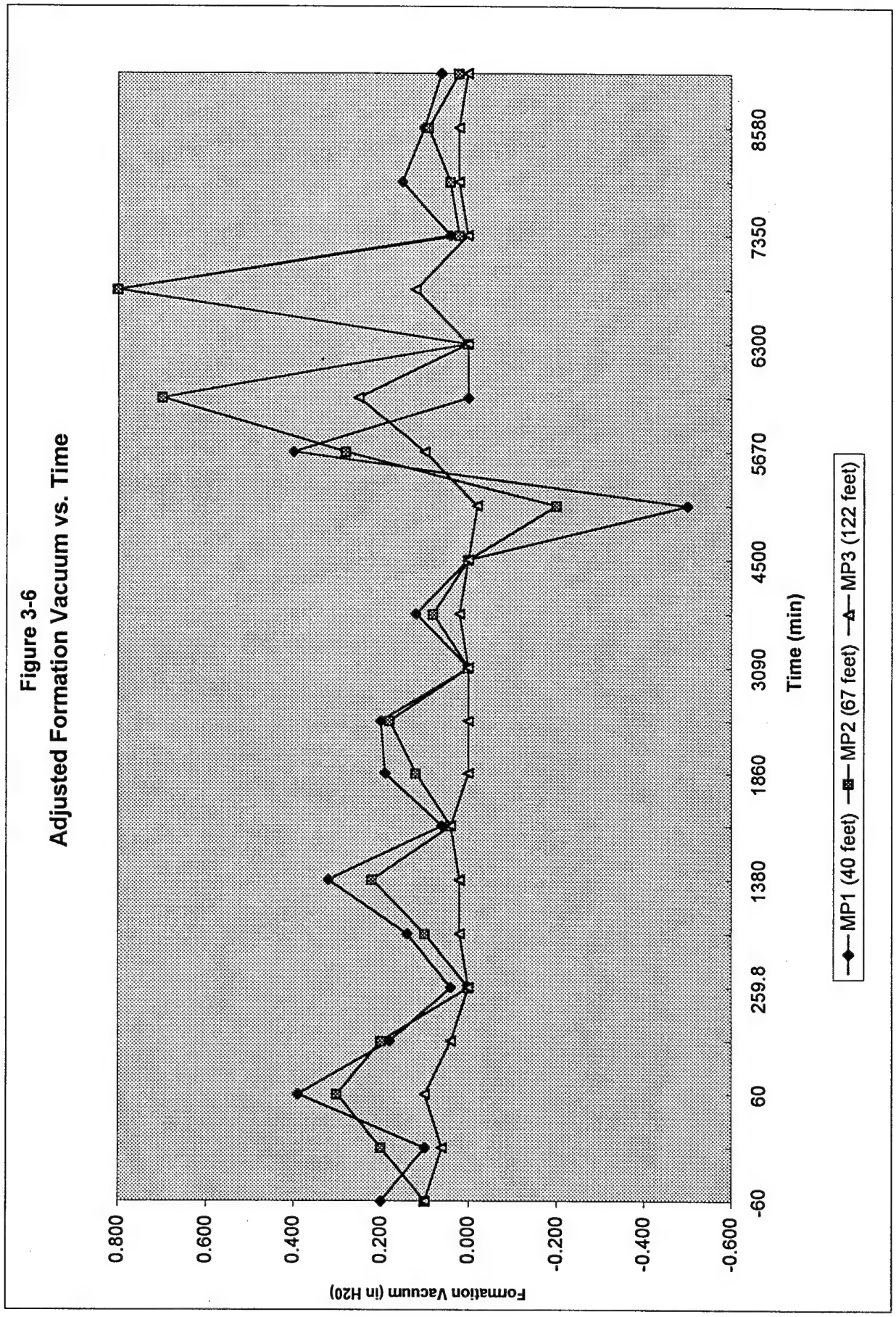


Figure 3-6
Adjusted Formation Vacuum vs. Time
Formation Vacuum (in H20)
0.800
0.600
0.400
0.200
0.000
-0.200
-0.400
-0.600
-60
60
259.8
1380
1860
3090
4500
5670
6300
7350
8580
Time (min)
MP1 (40 feet)
MP2 (67 feet)
MP3 (122 feet)

While the vacuum was connected to MP1, vapor piezometer readings were collected from MP2 and MP3. The vacuum induced at MP2 during this time was six times greater than the average under the typical configuration (vacuum connected to extraction well), and the vacuum induced at MP3 was eight times greater than the typical average. The radius of influence around MP1 was at least greater than 80 feet. Once again, this indicates that if the MPE system were given proper time to dewater the saturated clay layer, the radius of influence may increase considerably.

3.4.3 Soil Vapor VOC Recovery

TCE was the primary contaminant found in the extracted soil vapor. Table 3-4 is a general summary of the results for the VOCs detected in the soil vapor samples collected during the test. A complete listing of the analytical results is provided in Appendix F.

Table 3-4 Soil Vapor VOC Recovery Summary

Soil Vapor:	TCE	Total VOCs
Pre-test Concentration (ppmv)	0.21	0.21
Post-test Concentration (ppmv)	.076	.076
Average Concentration (ppmv)	0.39	0.5
Average Removal Rate (lbs/day)	0.013	0.014
Total Mass Removed (lbs)	0.081	0.083

lbs = pounds
ppmv = parts per million vapor
TCE = trichloroethlene
VOCs = volatile organic compounds

3.5 Recommendations

Offutt AFB is currently in the process of evaluating a number of technologies for remediating the groundwater contamination at Building 301. The data from this pilot test should be used to evaluate against other technologies to identify the most cost-effective solution. The LVDPE system operated during this test would extract approximately 2 times more TCE (.64 lbs/day) than a traditional pump and treat system. Using a 1.5 gpm flow rate and the pre- and post-test concentration data, a typical pump and treat system would be expected to extract 0.30 pound of TCE per day. The supporting calculation is provided in Appendix E.

The test results suggest that a high-vacuum configuration would be an effective remedy to the TCE contamination found in the groundwater at the Building 301. The high-vacuum radius of influence is estimated at approximately 200 feet horizontally. Depending on the exact extent of the contamination, it may be necessary to employ multiple extraction wells screened at multiple depths specific to the contaminant location.

4.0 REFERENCES

Radian Corporation, 1996. *Offutt AFB, Building 301 Vacuum-Enhanced Two-Phase Extraction (TPE) Pilot Scale Test Work Plan.* Final, Sacramento, CA. May.

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Woodward-Clyde, 1995. *Quality Assurance Project Plan Addendum for Facility 301 Remedial Investigation Draft, Nebraska*

APPENDIX A

Well Logs and Completion Diagrams

B301-

DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC	2. DRILLING SUBCONTRACTOR: Geotechnical Services, Inc.	SHEET 1 OF 6 SHEETS
3. PROJECT: Offut AFB Two-Phase Pilot	4. LOCATION: SWMU Bldg. 301	
5. NAME OF DRILLER: Doug	6. MANUFACTURERS DESIGNATION OF DRILL: Mobile B-61 HDX / Failing Mud Rotary	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 2" Split Spoon (2 ft.)	8. HOLE LOCATION: SWMU Bldg. 301	
	9. SURFACE ELEVATION: ~1057 ft. MSL	
	10. DATE STARTED: 5/13/96	11. DATE COMPLETED: 5/16/96
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED: ~56 ft.	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: ~42 ft. in Augers (24 hrs.)	
14. TOTAL DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): ~46 ft. bls. after well completed	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	SW 8240	METALS	SW 8270	SW 8080	TCLP	21. TOTAL CORE REC.
NONE						NA

22. DISPOSITION OF HOLE	BACKFILL	MONITORING WELL	OTHERS (SPECIFY)	23. SIGNATURE OF INSPECTOR
4" Well		X		Jim Powe

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h
			Concrete.				Recovery
	2		CLAY: light olive brown (2.5Y 5/3), homogeneous, medium plasticity, low toughness, moist, (CL)	Pushing Spoons	NA	—	R = 22"/24"
			Color change to dark gray (7.5YR 4/6) (2-3 ft. bls)				
	4		Loess.	Loess.	NA	—	24"/24"
			Finely laminated, trace black organic/carbon pieces (<1mm diameter).				
	6		Silty SAND: 2" thick, mottled dark brown with olive brown, fine gr. (SM)		NA	—	24"/24"
			CLAY: as above.				
	8		Color change to yellowish brown (10YR 5/4)		NA	—	12"/24"
					NA	—	18"/24"
	10						

PROJECT: Offut Two-Phase Pilot Study | HOLE NO.: EW-1

DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC
2. INSPECTOR: Jim Rowe
SHEET 2 OF 6 SHEETS

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h
			More homogeneous, no laminations, becomes siltier @ 10.5-ft.			(ppm)	Recovery
	12		CLAY with Silt: low plasticity, low toughness, soft, dry-moist, no organic pieces, brown (10YR 5/3), homogeneous. (CL)		NA	Bkg= 0.2 B.Z.= 0.2 Cuttings=0.2	R = 18"/24"
	14				NA	–	18"/24"
			Some dark grey laminations (<1mm).				
	16				NA	–	22"/24"
	18				NA	–	21"/24"
			1" hard, medium toughness, medium plasticity, color as above. (CL)				
	20				NA	–	22"/24"
	22		Increasing silt content, light yellowish brown (10YR 6/4).		NA	–	18/24"
			SILT with Clay: firm, dry, very low to non-plastic, light yellowish brown (10YR 6/4), low dry strength. (ML)		NA	–	6"/24"
	24					Bkg.= 0.1 ppm B.Z.= 0.1 Cutt.= 0.1	
	26		slightly more clay		NA	–	22"/24"
			Silty CLAY: firm, low plasticity, light yellowish brown (10YR 6/4), low toughness, low dry strength. (CL-ML)				16"/24"
	28						

PROJECT: Offutt AFB Two Phase Pilot Study | HOLE NO.: EW-1

DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC
2. INSPECTOR: Jim Rowe
SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h
			As above. Becomes siltier, gradational contact.				Recovery
	30		CLAYEY SILT: homogeneous, light olive brown (2.5Y 5/6), low plasticity, low toughness, low dry strength, clay content varies through sample. (ML)		NA	–	R= 20"/24"
	32		Trace carbon/organic particles (<1 mm).		NA	–	24"/24"
	34				NA	–	24"/24"
			Silty CLAY: yellowish brown (10YR 6/4), low plasticity, firm, moist, gradational contact back to silty (CL)		NA	–	24"/24"
	36		Clayey SILT: low plasticity, soft, homogeneous, occasional organic particles. (ML-CL)		Bkg. = 0.2 B.Z. = 0.2 Cuttings = 10.6		24"/24"
	38		organic pieces more abundant, up to 1.5 mm.		NA	–	
	40				NA	–	24"/24"
	42		Increasing clay content, color change to yellowish brown (10YR 5/6)		NA	–	16"/24"
	44		CLAY: yellowish brown (10YR 5/6), soft, medium toughness, low-medium plasticity, firm, trace organic pieces. (CL)		NA	–	17"/24"
	46				NA	–	24"/24"

PROJECT: Offutt AFB Two-Phase Pilot Study | HOLE NO.: EW-1

DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC
2. INSPECTOR: Jim Rowe
SHEET 4 OF 6 SHEETS

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h
			CLAY: (as above), more organic particles.				Recovery
	48				NA	–	R = 24"/24"
	50		More organic particles (but still trace – < 5%)	~4-6 inch of slough in augers	B.Z. = 0.1 Bkg = 0.1 Cutt = 0.1		24"/24"
	52				NA	–	16"/24"
	54				B.Z. = 0.1 Bkg. = 0.1 Cutt. = 2.6 NA	– –	20"/24"
	56		Increasing silt content from 56.5 - 57' Moist		NA	–	16"/24"
	58		Silty CLAY with trace Sand: light olive yellow brown (2.5Y 5/4), very low plasticity, very soft, low toughness. (CL-ML)		NA	–	12"/24"
	60		Silty SAND: fine to medium grained, subangular, wet, low density, light olive brown (2.5Y 5/6), saturated. (SM)	Definitely in water table.	NA	–	12"/24"
	62				NA	–	24"/24"
	64			Begin using drop-hammer	10		

PROJECT: Offut AFB Two-Phase Pilot Study | HOLE NO.: EW-1

DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC
2. INSPECTOR: Jim Rowe
SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h	
								64
			Silty CLAY: low plasticity, yellowish brown (10YR5/4) soft, low toughness, sharp contact to silty Sand. (CL)	Add some water to stop	10 18	—	24"/24"	
			Silty SAND: (as above).	Sands from coming up augers.	10 50+	—	12"/12"	B.Z. = 0.0 Bkg. = 6.6 66 Cutt. = 0.1
	66		Silty CLAY: (as above). ~4" Thick					
			Silty SAND: (as above)		9 10 12	—	24"/24"	68
	68		~2.0" Clay layer, fine laminations, rust colored staining.					
					8 9 19	—	24"/24"	B.Z = 0.0 Bkg. = 0.0 70 Cutt. = 0.1
	70		~1.5" Clay layer, as 68'.					
			SAND with Silt: very fine to medium grained, saturated, subangular, poorly to moderately graded, low density light olive brown (2.5Y 5/6) (SP)		7 10 20	—	24"/24"	72
	72		~1" Clay stringer, very soft, medium plasticity, light olive brown (2.5Y 5/6)					
			Silty SAND: very fine grained, some organic pieces, subangular, grades to poorly graded sand as silt content decreases. (SM)		9 5 7	—	24"/24"	74
	74							
			SAND with Silt: As 71-72.5' above		5 10 12	—	24"/24"	76
	76		siltier.		7 2 5	—	24"/24"	78
	78		SAND: poorly graded, fine to medium grained, angular to sub-angular, very little silt, dark yellowish brown (10YR4/6) homogeneous with slight mottling with olive brown (SP)		8 8 18	—	24"/24"	B.Z. = 0.0 80 Bkg. = 0.0 Cutt. = 0.1
	80		Some silt. Color change to olive brown					
				More H_2O added ~60 gallons total	20	—	24"/24"	82
	82							

PROJECT: Offutt AFB Two Phase Pilot Study

HOLE NO.: EW-1

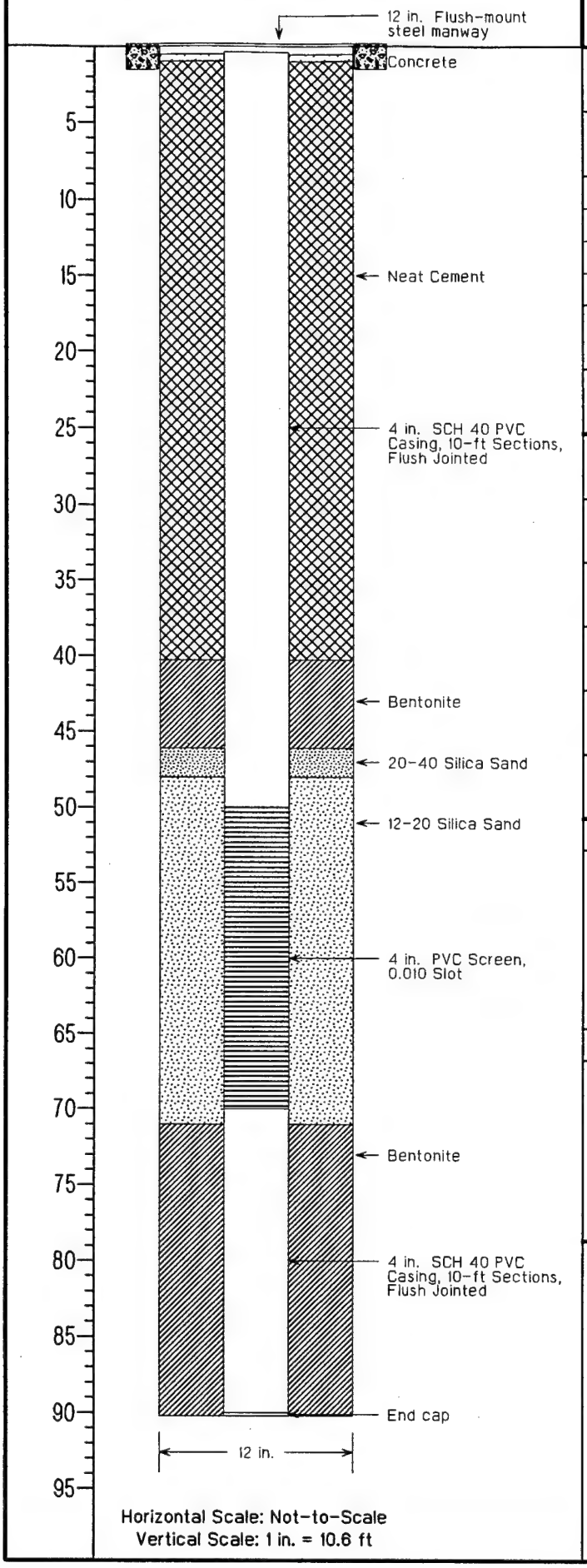
DRILLING LOG

HOLE NO. EW-1

1. COMPANY NAME: Radian International, LLC
2. INSPECTOR: Jim Rowe
SHEET 6 OF 6 SHEETS

ELEV. a	DEPTH b	GRAPHIC LOG c	DESCRIPTION OF MATERIALS d	REMARKS e	BLOW COUNTS f	FIELD SCREEN g	ANALYTICAL SAMPLE NO. h
			SAND: very poorly graded, mostly medium-coarse grained, trace silt, subangular. (SP).		16 21	—	
	84		- 1cm subangular pebble.		25 25 25	Bk=0.0 B.Z.=0.1 Cutt=0.1	R=24"/24"
	86			stop for day			
	88		SAND: poorly graded, subrounded to subangular, medium grained, some silt, lt. olive yellow brown (10YR5/4).		25 13 16		R=24"/24"
	90						
	92		T.D. = 92' b.l.s.				
	94		NOTE: Extraction well was set in this borehole using mud rotary due to difficulties sealing sump through augers. Mud rotary used a 12" bit to ream borehole to total depth.				
	96						
	98						
	100						

PROJECT: Offut AFB Two Phase Pilot Study HOLE NO.: EW-1



B301-EW-1 Extraction Well Completion Diagram

PROJECT: Dual Phase Pilot Study

SITE: Building 301 SWMU

WELL IDS: EW-1

WELL LOCATION: Offutt AFB, Nebraska

WELL OWNER: USAF, Offutt AFB

LOCATION: South of Bldg. 301

ELEVATION: ~1057 ft MSL

INSTALLER:	SUPERVISING GEOLOGIST:
Radian International	Jim Rowe
DRILLING COMPANY:	**DRILLER:**
GSI/Grosch Irrigation	Doug/Milt

DRILLING METHOD: HSA/Mud Rotary

START DATE:	EQUIPMENT USED:
13 May 1996	12" OD Hollow Stem Auger
END DATE:	12" Mud Rotary
16 May 1996	
DEPTH DRILLED:	**GROUNDWATER DEPTH:**
90.2 ft (bls)	~42 ft (bls)

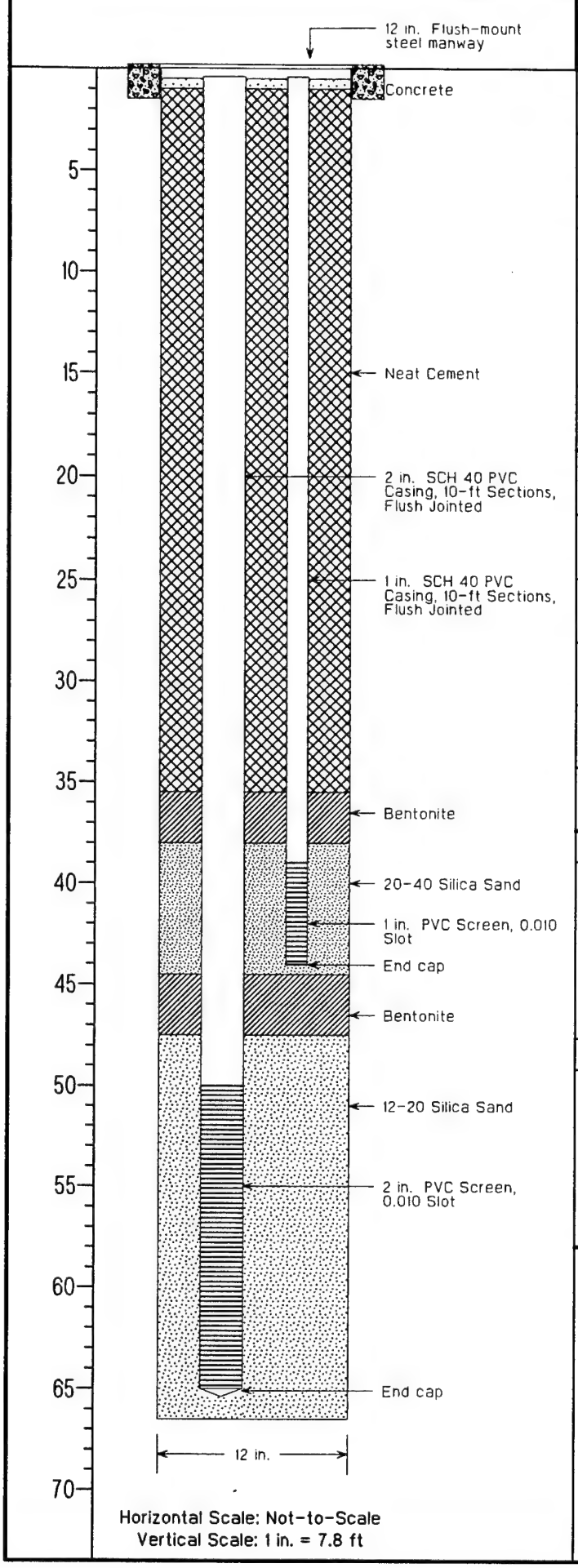
WELL ID:	EW-1	Units
Screen Top:	50	feet bls.
Screen Bottom:	70	feet bls.
Screen Length:	20	feet
Filter Pack:	23.5 x 50-lb.	bags 12-20 Georgia Silica
Bridge Material:	4 x 50-lb.	bags 20-40 Georgia Silica
Seal Material:	3 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	5.8	feet

WELL ID:		Units
Screen Top:		
Screen Bottom:		
Screen Length:		
Filter Pack:		
Bridge Material:		
Seal Material:		
Seal Thickness:		

REMARKS:

The borehole was first drilled using HSA. Because of insufficient annular space, bridging occurred in the augers and the lower seal could not be emplaced. The well casing was pulled and the borehole was sealed to the water table. On May 16, the borehole was reamed out using a mud rotary rig and the well was set as indicated in the diagram.

EW-1.LOG 07/10/1996



Horizontal Scale: Not-to-Scale
Vertical Scale: 1 in. = 7.8 ft

B301-MP-1 Piezometer Completion Diagram

PROJECT: Dual Phase Pilot Study

SITE: Building 301 SWMU

WELL IDS: PZ-1, VP-1

WELL LOCATION: Offutt AFB, Nebraska

WELL OWNER: USAF, Offutt AFB

LOCATION: South of Bldg. 301

ELEVATION: ~1057 ft MSL

INSTALLER:	SUPERVISING GEOLOGIST:
Radian International	Jim Rowe
DRILLING COMPANY:	**DRILLER:**
GSI	Doug

DRILLING METHOD: HSA

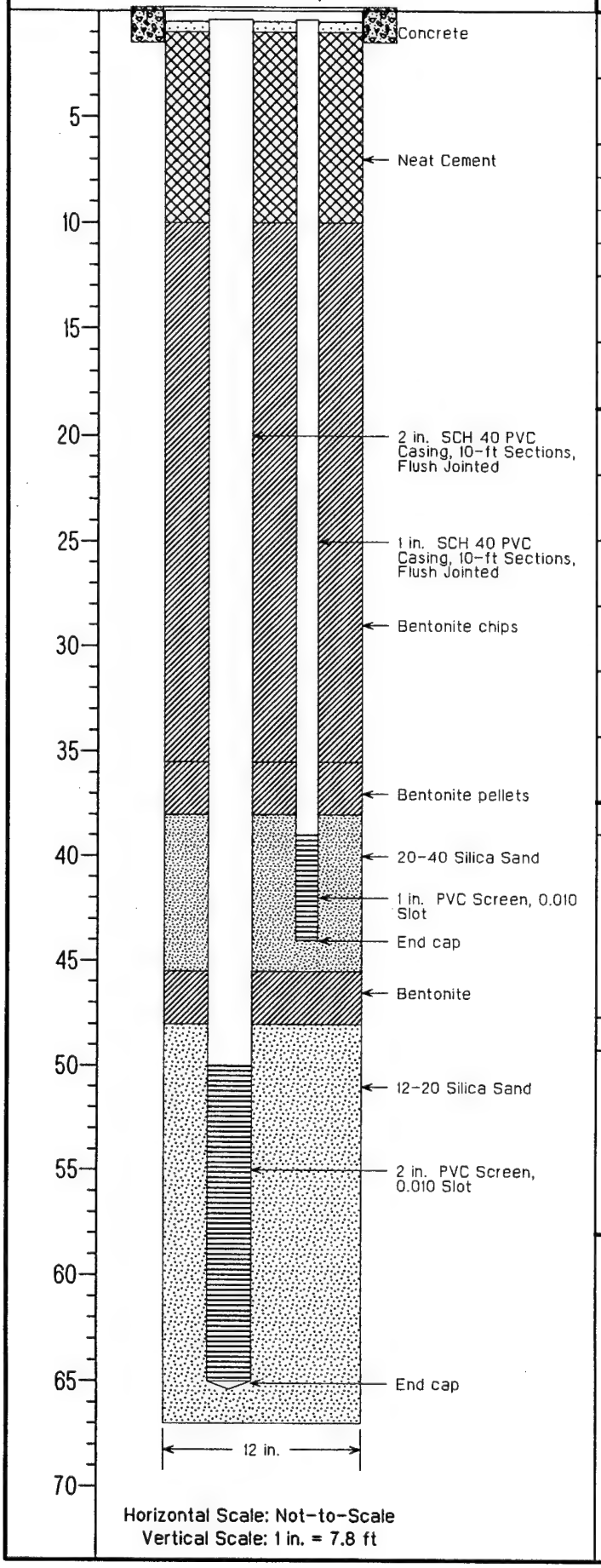
START DATE:	EQUIPMENT USED:
15 May 1996	12" OD Hollow Stem Auger
END DATE: 15 May 1996	
DEPTH DRILLED: 66.5 ft (bls)	**GROUNDWATER DEPTH:** ~45.3 ft (bls)

WELL ID:	PZ-1	Units
Screen Top:	50	feet bls.
Screen Bottom:	65	feet bls.
Screen Length:	15	feet
Filter Pack:	15.5 x 50-lb.	bags 12-20 Georgia Silica
Bridge Material:	NA	
Seal Material:	3 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	3	feet

WELL ID:	VP-1	Units
Screen Top:	39	feet bls.
Screen Bottom:	44	feet bls.
Screen Length:	5	feet
Filter Pack:	5 x 50-lb.	bags 20-40 Georgia Silica
Bridge Material:	NA	
Seal Material:	2 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	2.5	feet

REMARKS:

PZ-01.LOG 07/10/1996



Horizontal Scale: Not-to-Scale
Vertical Scale: 1 in. = 7.8 ft

B301-MP-2 Piezometer Completion Diagram

PROJECT: Dual Phase Pilot Study

SITE: Building 301 SWMU

WELL IDS: PZ-2, VP-2

WELL LOCATION: Offutt AFB, Nebraska

WELL OWNER: USAF, Offutt AFB

LOCATION: South of Bldg. 301

ELEVATION: ~1056.5 ft MSL

INSTALLER:	SUPERVISING GEOLOGIST:
Radian International	Jim Rowe
DRILLING COMPANY:	**DRILLER:**
GSI	Doug

DRILLING METHOD: HSA

START DATE:	EQUIPMENT USED:
16 May 1996	12" OD Hollow Stem Auger
END DATE:	
16 May 1996	
DEPTH DRILLED:	**GROUNDWATER DEPTH:**
67 ft (bls)	~45.3 ft (bls)

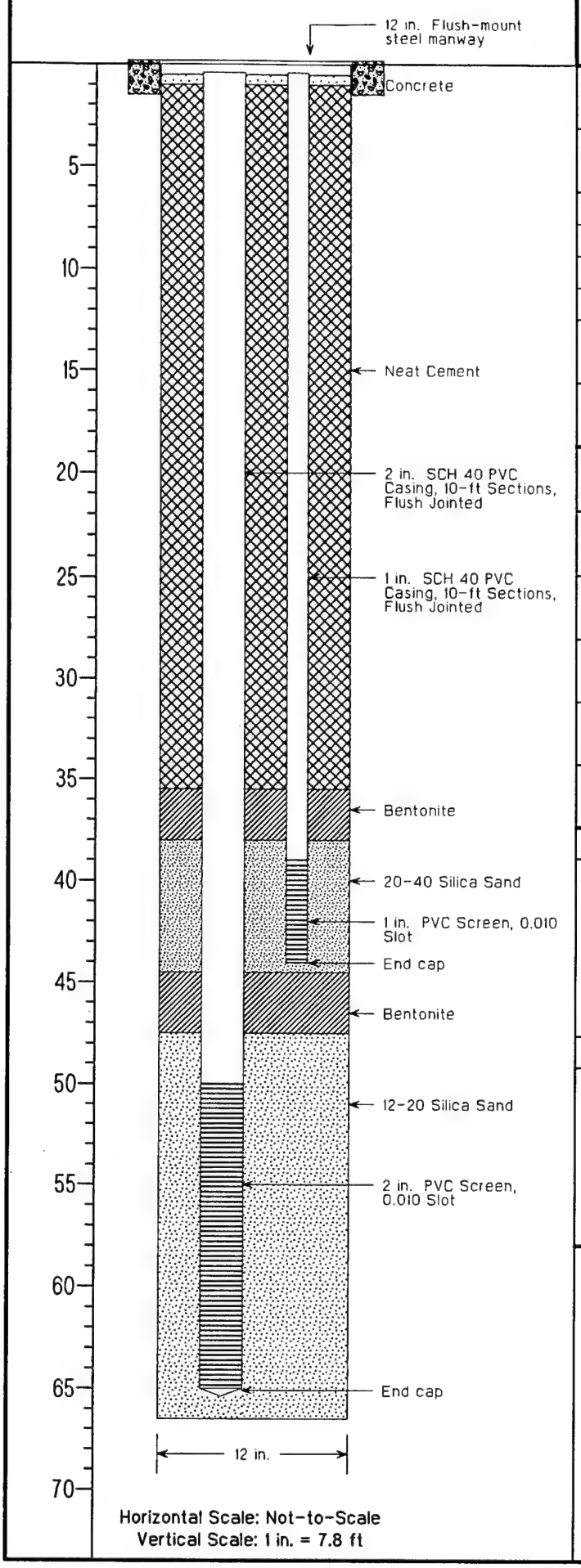
WELL ID:	PZ-2	Units
Screen Top:	50	feet bls.
Screen Bottom:	65	feet bls.
Screen Length:	15	feet
Filter Pack:	15.0 x 50-lb.	bags 12-20 Georgia Silica
Bridge Material:	NA	
Seal Material:	2 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	2.5	feet

WELL ID:	VP-2	Units
Screen Top:	39	feet bls.
Screen Bottom:	44	feet bls.
Screen Length:	5	feet
Filter Pack:	6 x 50-lb.	bags 20-40 Georgia Silica
Bridge Material:	NA	
Seal Material:	3 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	28	feet

REMARKS:

PZ-02.LOG 07/10/1996

B301-MP-3 Piezometer Completion Diagram



Horizontal Scale: Not-to-Scale
Vertical Scale: 1 in. = 7.8 ft

PROJECT: Dual Phase Pilot Study

SITE: Building 301 SWMU

WELL IDS: PZ-3, VP-3

WELL LOCATION: Offutt AFB, Nebraska

WELL OWNER: USAF, Offutt AFB

LOCATION: South of Bldg. 301

ELEVATION: ~1056 ft MSL

INSTALLER:	SUPERVISING GEOLOGIST:
Radian International	Jim Rowe
DRILLING COMPANY:	**DRILLER:**
GSI	Doug

DRILLING METHOD: HSA

START DATE:	EQUIPMENT USED:
17 May 1996	12" OD Hollow Stem Auger
END DATE:	
17 May 1996	
DEPTH DRILLED:	**GROUNDWATER DEPTH:**
66.5 ft (bls)	~45 ft (bls)

WELL ID:	PZ-3	Units
Screen Top:	50	feet bls.
Screen Bottom:	65	feet bls.
Screen Length:	15	feet
Filter Pack:	15 x 50-lb.	bags 12-20 Georgia Silica
Bridge Material:	NA	
Seal Material:	2 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	3	feet

WELL ID:	VP-3	Units
Screen Top:	39	feet bls.
Screen Bottom:	44	feet bls.
Screen Length:	5	feet
Filter Pack:	6 x 50-lb.	bags 20-40 Georgia Silica
Bridge Material:	NA	
Seal Material:	2 x 5-gal.	1/4" and 3/8" bentonite pellets
Seal Thickness:	3	feet

REMARKS:

PZ-03.LOG 07/10/1996

APPENDIX B

Field Data Sheets

Dual-phase Extraction System Treatbility Study Field Data Sheet								
Table 5-1								
SCHEDULE			WATER LEVEL (ft)			PIEZOMETER VACUUM (in H2O)		
Day	Time (hh.hh)	Total Hrs	MP1	MP2	MP3	V1	V2	V3
1	9.00	-1.00	46.72	47.34	48.1	0.2	0.1	0.1
1	10.17	0.17	46.86	47.42	48.12	0.1	0.2	0.06
1	11.00	1.00	47.16	47.54	48.18	0.39	0.3	0.1
1	12.50	2.50	47.24	47.62	48.22	0.18	0.2	0.04
1	14.33	4.33	47.26	47.64	48.24	0.04	0	0
1	19.33	9.33	47.28	47.66	48.24	0.14	0.1	0.02
2	9.00	23.00	47.38	47.76	48.32	0.32	0.22	0.02
2	13.00	27.00	47.38	47.76	48.32	0.06	0.04	0.04
2	17.00	31.00	47.37	47.75	48.34	0.19	0.12	0
3	8.50	46.50	47.47	47.87	48.42	0.2	0.18	0
3	13.50	51.50	47.48	47.86	48.4	0	0	0
4	8.50	70.50	47.4	47.8	48.44	0.12	0.08	0.02
4	13.00	75.00	47.4	47.78	48.32	0	0	0
4	17.5	79.50	47.32	47.68	48.22	-0.5	-0.2	-0.02
5	8.5	94.50	47.44	47.78	48.32	0.4	0.28	0.1
5	13.5	99.50	47.44	47.8	48.3	0	0.7	0.25
5	19	105.00	47.48	47.81	48.33	0	0	0
6	8.5	118.50	47.57	47.92	48.44	0.8	0.8	0.12
6	12.5	122.50	47.53	47.88	48.42	0.04	0.02	0
6	20	130.00	47.5	47.86	48.4	0.15	0.04	0.02
7	9	143.00	47.58	47.9	48.23	0.1	0.09	0.02
7	11.5	145.50	47.54	47.9	48.42	0.06	0.02	0
System Start Time (time datum) = 10:00 am 5/19/96								

Table 5-2			Vapor Phase Readings					Liquid Phase Readings			Power	
SCHEDULE			Well	leed Valv	Outlet	Vapor	Pitot Tube	Water	Cum. Water	Cum. Water	Generator	System
Day	ime (hh.h	Total Hrs	Vacuum (in Hg)	Position	Temp. (F)	low (scfm	(in. H20)	ressure (p	Flow (gage)	low (actual	Hours (h)	Hours (h)
1	10.00	0.00	NA						85835.0	0.0	2623.0	12890
1	10.83	0.83	10.5	0.67	200.00	79	NA	15	85998.0	163.0	2624.0	12890
1	12.42	2.42	10.5	0.67	215.00	80	NA	15	86319.0	484.0	2625.6	12890.5
1	14.50	4.50	9.0	0.6	214.00	96	NA	15	86759.9	924.9	2628.0	12892.8
1	18.50	8.50	9.2	0.6	200.00	100	NA	15	87521.7	1686.7	2632.3	12897.2
2	9.00	23.00	9.5	0.6	178.00	100	NA	15	89926.5	4091.5	2645.8	12910
2	13.00	27.00	9.5	0.6	191.00	97	NA	15	90701.0	4866.0	2650.3	12915.4
2	17.00	31.00	10.0	0.67	195.00	98	NA	8	91347.0	5512.0	2654.0	12917.9
3	8.50	46.50	10.0	0.67	195.00	91	NA	12	94103.0	8268.0	2669.4	12917.9
3	13.50	51.50	10.0	0.67	209.00	93	NA	12	94973.0	9138.0	2674.4	12917.9
3	20.00	58.00	10.0	0.67	180.00	102	NA	11.5	96276.0	10441.0	2681.8	12917.9
4	10.50	72.50	10.0	0.67	205.00	82	NA	12	98615.0	12780.0	2690.3	12917.9
4	13.00	75.00	11.0	0.83	210.00	92	0.11	12	99126.5	13291.5	2692.9	12917.9
4	15.50	77.50	9.0	0.67	205.00	105	0.03	12	99703.0	13868.0	2696.1	12917.9
5	8.50	94.50	12.0	0.67	210.00	68	0	12	102764.0	16929.0	2704.3	12917.9
5	13.50	99.50	12.5	0.67	NA	62	NA	12	103926.0	18091.0	2708.8	12922.8
5	19.00	105.00	12.0	0.67	NA	63	0.03	12.5	104779.0	18944.0	2713.0	12922.8
6	8.50	118.50	12.7	0.67	NA	65	0.04	11	107386.5	21551.5	2726.1	12940.4
6	12.00	122.00	14.5	0.67	NA	47	0	8	108181.8	22346.8	2730.2	12944.6
6	20.00	130.00	12.0	0.67	NA	64	0	7	109399.5	23564.5	2738.4	12946
7	9.00	143.00	13.0	0.67	NA	61	0.9	7	111855.0	26020.0	2750.6	12946
7	12.08	146.08	12.0	0.67	NA	69	0.4	7	112460.4	26625.4	2753.7	12946

65.40 ft deep
47.66
17.74

OR?

Table 5-1. Field Measurements Data Sheet

1 0.25 1 11:00 1025 47.16 47.54 48.18 .59 .30 .10

Schedule		Actual Schedule		Total Hours	Water Level (ft)			Plezometer Vacuum (in. WC)		
Day	Hour	Day	Time		M P1	M P2	M P3	V1	V2	V3
1	before	1	0900	BE4	46.72	47.34	48.10	0.20	0.10	0.10
1	start	1	1025	0.0	46.86	47.42	48.12	0.10	0.20	0.06
1	2	1	1230		47.24	47.62	48.22	0.18	0.20	0.04
1	4	1	1425		47.26	47.64	48.24	0.14	0.00	0.00
1	6									
1	8	1	1920		47.28	47.66	48.24	0.14	0.10	0.02
2	24	2	0900		47.38	47.76	48.32	0.32	0.22	0.02
2	28	2	1300		47.38	47.76	48.32*	0.06	0.04	0.04
2	32	2	1700		47.37	47.75	48.34	0.19	0.12	0.0
3	48	3	0830		47.47	47.87	48.42	0.20	0.18	0.02
3	52	3	1330		47.48	47.86	48.40	NEG(pres)	NEG(pres)	0.0
4	72	4	0830		47.40	47.80	48.44	0.12	0.08	0.02
4	74	4	1030							
4	76	4	1300		47.40	47.78	48.32	NEG(pres)	neg(pres)	neg(pressure)
4	80	4	1730		47.32	47.68	48.22	-0.5(pres)	-0.2(pres)	-0.2(pres)
5	96	5	0830		47.44	47.78	48.32	.40	.28	0.1
5	100	5	1350		47.44	47.80	48.30	Vacuum connected 17 CFM	0.70	0.25
5	104	5	1900		47.48	47.81	48.33	NA-vacuum connected	0.0	0.0
6	120	6	0830		47.57	47.92	48.44	0.80	0.80	0.12
6	124	6	1250		47.53	47.88	48.42	0.04	0.02	0.00
6	128	6	2000		47.50	47.86	48.40	0.15	0.09	0.02
7	144	7	0900		47.58	47.90	48.23	0.10	0.09	0.02
7	148	7	1130		47.54	47.90	48.42	0.06	.02	0.00
7	152 (end)									

Not Taken

*SEE NOTE BELOW LOOSE FITTING

* VACUUM connected to MP1

- VACUUM ON MP1 & OFF

- Vacuum dropping

*Drillers cut .5' from top of well @ 1300 → add 0.5 ft to all remaining depth measurements

.00

440.9
2.4 L

OFFUTFWP.DOC

Table 5-2. DPE Operating Conditions Field Data Sheet

Page 1 of _____
Date: 5/19/96
Well Being Tested: VETPE - WELL
Site: BLDG 301 VETPE WELL
Sampler(s): TC MJT

		Vapor Phase Readings					Liquid Phase Readings		Power		Other	
Day	Time	Well Vacuum (in. Hg)	~~System~~ Blast Air Valve position Vacuum (in. Hg)	~~Inlet~~ Outlet Temp (F)	Vapor Flow (scfm)	PID prior to GAC 1 (ppm)	Water Pressure (pump running) (psi)	Water Flow Meter Reading (gallons)	Total Generator Hours (h)	Fuel Tank Level (---full)	System Hours	Pitot tube Δ (in. H_2O)
1	1006							85835	2623		12890.0	
1	1050	10.5	2/3 closed	200 F	79	NA	15	[illegible]	2634.0		12894.0	
1	1225	10	"	215 F	80	NA	15	86318	2625.6		12890.8	
1	1430	9.0	[illegible]	214 F	96	NA	15	86759.9	2628.0		12892.8	
1	1830	9.2	SAME	200 F	100	NA	15	87521.7	2632.3		12897.2	
2	0900	9.5	"	178 F	100	NA	15	89926.5	2645.8		12910.0	
2	1300	9.5	"	191 F	97	NA	15	90701.0	2650.3		12915.4	
2	1700	10.0	2/3 closed	195 F	98	~~NA~~ Dwl gage	8.0	91347.0	2654.0		12917.9	?
3	0830	10.0	"	195 F	91	~~NA~~ Dwl gage	12.0	94103.0	2669.4		12917.9	
3	1330	10.0	"	209 F	93	NA	12.0	94973.0	2674.4		"	
3	2000	10.0	2/3 closed	180 F	102	NA	11.5	96276.0	2681.8		"	
4	1030	10.0	"	205 F	82	NA	12.0	98615.0	2690.3		"	
4	1300	10.0	5/6 closed	210 F	92	NA	12	99126.5	2692.9		"	0.11

Shut down for 15 min to add to carbon

Comments:

TABLE 5-2 continued

DAY	TIME	~~BLEED AIR~~ WELL VACUUM	BLEED AIR	OUTLET TEMP (F)	VAPOR FLOW (Scfm)	DID	WATER PRESSURE (psi)	WATER FLOW METER READING (G)	TOTAL GENERATOR HOURS	PITOT TUBE (in H_2O)	SYSTEM HOURS
4	1530	9	2/3 closed	205	105	NA	12	99703.0	2696.1	0.03	BROKEN
4											4
5	0830	12	"	210	68	NA	12	102764.0	2704.3	0.00	12922.8
5	1330	12.5	"	BROKEN	62	NA	12	103926.0	2708.8	NA	12922.8
5	1900	12	"	"	63	NA	12.5	104779.0	2713.0	0.03	12922.8
6	0830	12.7	"	"	65	NA	11.0	107386.5	2726.1	0.03 to 0.06	12940.4
6	1200	14.5	"	"	47	NA	8.0	108180.8	2730.2	0.00	12944.0
6	2000	12	"	"	64	NA	7.0	109399.5	2738.4	0.00	12946.0
7	0900	13	"	"	61	NA	7.0	111855.0	2750.6	0.00	12946.0 BROKEN
7	1205	12	"	"	69	NA	7.0	112460.4	2753.7	0.40	Broken

must be incorrect value = 0.09

vapor connection to MP1 added ≈ 15 cfm

Unit shut down 13 hours

APPENDIX C

Data Quality Summary with Analytical Data

QUALITY SUMMARY

This document summarizes results obtained from the quality assurance/quality control (QA/QC) activities performed for the Technology Evaluation Report prepared for the VETPE pilot study conducted at Offutt Air Force Base (AFB) in Omaha, Nebraska.

The primary goals of the QA/QC activities were to:

Ensure that data of known quality were obtained;

Minimize transcription and reporting errors; and

Identify any data use limitations and communicate these to the data users.

These goals were accomplished by comparing three types of QC samples, blanks, spikes and duplicates, with the laboratory and method specifications for precision and accuracy and performing a complete review of analytical reports, and holding time compliance.

Groundwater and vapor samples were collected for the VETPE system at Offutt AFB on May 19th through May 24th, 1996. All groundwater samples were analyzed by Radian Analytical Services in Austin, TX. All vapor analyses were performed by MICROSEEPS in Pittsburgh, PA. All analyses were performed as requested. All holding time requirements were met.

No systematic laboratory contamination was identified. The concentrations of ethylbenzene, methylene chloride, and m&p-xylenes reported in the trip blank were not significantly different from those in the method blank. The following concentrations should be considered as suspect:

Benzene -- OFPT-GW-00-MP2, and OFPT-LCE2-032;

Methylene chloride-- OFPT-GW-00-MP2, OFPT-LCE2-032, OFPT-EL03-048, OFPT-EL03-056 and OFPT-LD03-056.

No other problems were identified with the groundwater data.

Volatiles Using SW8260A and MICROSEEPS

Benzene, methylene chloride, ethylbenzene, and m&p-xylenes were detected in the method blanks associated with the Offutt AFB SW8260 analyses. Only benzene and methylene chloride were

reported in the field samples at similar concentrations. The concentrations in the samples listed above should be considered as potentially due to laboratory contribution.

Two field duplicate pairs were analyzed for water and one pair for soil. All water results were repeatable. Nothing was detected in the vapor.

Laboratory control sample results were acceptable for all analytes. Surrogate spike results were acceptable for all analytes. All other SW8260A and MICROSEEPS data are valid and accuracy and precision are within the acceptance criteria of the laboratory and analytical method. No problems are indicated by these results.

MICROSEEPS

RAD76-962432

----- RADIAN INTERNATIONAL ----

----- PROJECT : OFFUTT VETPE PILOT TEST / BLDG. 301 -----

----- 601/602 SCAN -- CONCENTRATIONS IN PPMV -----

COMPOUND NAME	OFPT-SV00-8E4	OFPT-EV01-0.25	OFPT-EV01-002	OFPT-EV01-004	OFPT-EV01-008	OFPT-VD01-008	OFPT-EV02-024	OFPT-EV02-028	LDLs
CHLOROMETHANE	<1	<1	<1	<1	<1	<1	<1	<1	1
VINYL CHLORIDE	<1	<1	<1	<1	<1	<1	<1	<1	1
BROMOMETHANE/CHLOROETHANE*	<1	<1	<1	<1	<1	<1	<1	<1	1
FLUOROTRICHLOROMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,1 DICHLOROETHYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
METHYLENE CHLORIDE	<1	<1	<1	<1	<1	<1	<1	<1	1
TRANS-1,2 DICHLOROETHYLENE	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.1
1,1 DICHLOROETHANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
CHLOROFORM	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,1,1 TRICHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CARBON TETRACHLORIDE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
BENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,2 DICHLOROETHANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
TRICHLOROETHYLENE	0.021	0.042	0.100	0.021	0.042	0.029	0.067	0.066	0.005
1,2 DICHLOROPROPANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
BROMODICHLOROMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CIS-1,3 DICHLOROPROPYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
TOLUENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
TRANS-1,3 DICHLOROPROPYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
1,1,2 TRICHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
TETRACHLOROETHYLENE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CHLORODIBROMOMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
ETHYL BENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
BROMOFORM	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,1,2,2 TETRACHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,3 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,4 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,2 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
FILE NAME	W62 407	W62 408	W62 411	W62 412	W62 413	W62 419	W62 415	W62 416	
DATE SAMPLED	05/19/96	05/19/96	05/19/96	05/19/96	05/19/96	05/19/96	05/20/96	05/20/96	
DATE RECEIVED	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	
DATE ANALYZED	05/30/96	05/30/96	05/30/96	05/30/96	05/30/96	05/30/96	05/30/96	05/30/96	

* COMPOUNDS ELUTE TOGETHER ON ECD: VALUES REPRESENT EITHER OR A COMBINATION OF BOTH.

31-May-96

ANALYST INITIALS

LAB MANAGER INITIALS

RCV BY:

: 5-31-96 : 14:39 :

-RADIAN INTERNATIONAL;# 2

MICROSEEPS

RAD76-962432

**** QUALITY CONTROL ****

----- RADIAN INTERNATIONAL ----
----- PROJECT : OFFUTT VETPE PILOT TEST / BLDG. 301 -----
----- 601/602 SCAN -- CONCENTRATIONS IN PPMV -----

CONTINUING CALIBRATION CHECK

STANDARDS: "624"(LEVEL 2), "624"(LEVEL 1), "VC-996"
REFERENCE: W62A/B394, W62A/B395, W62A396

COMPOUND	KNOWN	RESULT	PERCENT DIFFERENCE
CHLOROMETHANE	20.8	22.4	7.06
VINYL CHLORIDE	996.0	971.9	2.48
BROMOMETHANE/CHLOROETHANE*	2.7	2.9	8.16
FLUOROTRICHLOROMETHANE	0.765	0.801	4.49
1,1 DICHLOROETHYLENE	1.09	1.06	2.55
METHYLENE CHLORIDE	1.24	1.31	5.64
TRANS-1,2 DICHLOROETHYLENE	1.09	1.14	4.91
1,1 DICHLOROETHANE	1.06	1.13	5.93
CHLOROFORM	0.881	0.919	4.13
1,1,1 TRICHLOROETHANE	0.788	0.827	4.72
CARBON TETRACHLORIDE	0.684	0.706	3.12
BENZENE & 1,2-DCA**	2.41	2.33	3.66
1,2 DICHLOROETHANE	1.06	1.13	6.26
TRICHLOROETHYLENE	0.800	0.810	1.23
1,2 DICHLOROPROPANE	0.93	1.04	10.31
BROMODICHLOROMETHANE	0.642	0.654	1.83
CIS-1,3 DICHLOROPROPYLENE	0.95	0.96	0.94
TOLUENE	1.14	1.07	7.14
TRANS-1,3 DICHLOROPROPYLENE	0.95	0.97	2.07
1,1,2 TRICHLOROETHANE	0.788	0.783	0.64
TETRACHLOROETHYLENE	0.634	0.625	1.44
CHLORODIBROMOMETHANE	0.505	0.498	1.41
CHLOROBENZENE	0.93	0.90	3.78
ETHYL BENZENE	0.99	0.96	2.91
BROMOFORM	0.416	0.406	2.46
1,1,2,2 TETRACHLOROETHANE	0.626	0.613	2.12
1,3 DICHLOROBENZENE	0.72	0.66	7.68
1,4 DICHLOROBENZENE	0.72	0.66	7.84
1,2 DICHLOROBENZENE	0.72	0.66	7.27

* COMPOUNDS ELUTE TOGETHER ON ECD: VALUES REPRESENT EITHER OR A COMBINATION OF BOTH.
** COMPOUNDS ELUTE TOGETHER ON FID - VALUE REPRESENTS A COMBINATION OF BOTH.

30-May-96

ANALYST INITIALS

LAB MANAGER INITIALS

MICROSEEPS

RAD76-962432

**** QUALITY CONTROL ****

----- RADIAN INTERNATIONAL ----
----- PROJECT : OFFUTT VETPE PILOT TEST / BLDG. 301 -----
----- 601/602 SCAN -- CONCENTRATIONS IN PPMV -----

LABORATORY BLANK RESULTS

N2 IN VIAL
REFERENCE: W62A/B393

COMPOUND	BLANK	LOWER DETECTION LIMIT
CHLOROMETHANE	ND	1.0
VINYL CHLORIDE	ND	1.0
BROMOMETHANE/CHLOROETHANE*	ND	1.0
FLUOROTRICHLOROMETHANE	ND	0.005
1,1 DICHLOROETHYLENE	ND	0.01
METHYLENE CHLORIDE	ND	1.00
TRANS-1,2 DICHLOROETHYLENE	ND	0.10
1,1 DICHLOROETHANE	ND	0.01
CHLOROFORM	ND	0.005
1,1,1 TRICHLOROETHANE	ND	0.005
CARBON TETRACHLORIDE	ND	0.005
BENZENE	ND	0.07
1,2 DICHLOROETHANE	ND	0.01
TRICHLOROETHYLENE	ND	0.005
1,2 DICHLOROPROPANE	ND	0.01
BROMODICHLOROMETHANE	ND	0.005
CIS-1,3 DICHLOROPROPYLENE	ND	0.01
TOLUENE	ND	0.07
TRANS-1,3 DICHLOROPROPYLENE	ND	0.01
1,1,2 TRICHLOROETHANE	ND	0.005
TETRACHLOROETHYLENE	ND	0.005
CHLORODIBROMOMETHANE	ND	0.005
CHLOROBENZENE	ND	0.07
ETHYL BENZENE	ND	0.07
BROMOFORM	ND	0.005
1,1,2,2 TETRACHLOROETHANE	ND	0.005
1,3 DICHLOROBENZENE	ND	0.07
1,4 DICHLOROBENZENE	ND	0.07
1,2 DICHLOROBENZENE	ND	0.07

* COMPOUNDS ELUTE TOGETHER ON ECD - VALUES REPRESENT EITHER OR A COMBINATION OF BOTH.

30-May-96

ANALYST INITIALS

LAB MANAGER INITIALS

MICROSEEPS

RAD76-962432

----- RADIAN INTERNATIONAL ----

----- PROJECT : OFFUTT VETPE PILOT TEST / BLDG. 301 -----

----- 601/602 SCAN -- CONCENTRATIONS IN PPMV -----

COMPOUND NAME	OFPT-EV02-032	OFPT-EV03-048	OFPT-EV03-056	OFPT-VD03-056	OFPT-EV04-076	OFPT-EV05-100	OFPT-EV06-124(V)	OFPT-EV06-124(P)	OFPT-EV07-148(P)	OFPT-EV07-148(V)	LDLs
CHLOROMETHANE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
VINYL CHLORIDE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
BROMOMETHANE/CHLOROETHANE*	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
FLUOROTRICHLOROMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,1 DICHLOROETHYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
METHYLENE CHLORIDE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1
TRANS-1,2 DICHLOROETHYLENE	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	0.1
1,1 DICHLOROETHANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
CHLOROFORM	<.005	<.005	<.005	<.005	<.005	0.211	0.043	<.005	<.005	0.033	0.005
1,1,1 TRICHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CARBON TETRACHLORIDE	<.005	<.005	<.005	<.005	<.005	0.007	0.005	<.005	<.005	<.005	0.005
BENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,2 DICHLOROETHANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
TRICHLOROETHYLENE	0.122	0.090	0.035	0.075	0.133	7.994	2.995	0.119	0.076	1.857	0.005
1,2 DICHLOROPROPANE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
BROMODICHLOROMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CIS-1,3 DICHLOROPROPYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
TOLUENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
TRANS-1,3 DICHLOROPROPYLENE	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	0.01
1,1,2 TRICHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
TETRACHLOROETHYLENE	<.005	<.005	<.005	<.005	<.005	0.211	0.031	<.005	<.005	0.027	0.005
CHLORODIBROMOMETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
CHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
ETHYL BENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
BROMOFORM	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,1,2,2 TETRACHLOROETHANE	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	<.005	0.005
1,3 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,4 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
1,2 DICHLOROBENZENE	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	<.07	0.07
FILE NAME	W62 397	W62 398	W62 399	W62 400	W62 401	W62 402	W62 403	W62 404	W62 405	W62 406	
DATE SAMPLED	05/20/96	05/21/96	05/21/96	05/21/96	05/22/96	05/23/96	05/24/96	05/24/96	05/25/96	05/25/96	
DATE RECEIVED	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	05/28/96	
DATE ANALYZED	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	05/29/96	05/30/96	05/30/96	

* COMPOUNDS ELUTE TOGETHER ON ECD: VALUES REPRESENT EITHER OR A COMBINATION OF BOTH.

30-May-96

ANALYST INITIALS JW

LAB MANAGER INITIALS BK

RCV BY: ; 5-31-96 ; 14:40 ; RADIAN INTERNATIONAL ; # 5

FLAG DEFINITIONS

Flag	Definition
< DL	Result less than stated Detection Limit and greater than or equal to zero.
NA	Analyte concentration not available for this analysis.
NC	RPD and/or % Recovery not calculated. See Narrative for explanation.
ND	Not detected. No instrument response for analyte or result less than zero.
NR	Not reported. Result greater than or equal to stated Detection Limit and less than specified Reporting Limit.
NS	Analyte not spiked.
B	Analyte detected in method blank at concentration greater than the Reporting Limit (and greater than zero).
C	Confirming data obtained using second GC column or GCMS.
E	Analyte concentration exceeded calibration range.
F	Interference or coelution suspected. See Narrative for explanation.
H	Presence of analyte previously confirmed by historical data.
I	Analyte identification suspect. See Narrative for explanation.
J	Result is less than stated Detection Limit but greater than or equal to specified Reporting Limit.
K	Peak did not meet method identification criteria. Analyte not detected on other GC column.
M	Result modified from previous Report. See Narrative for explanation.
P	Analyte not confirmed. Results from primary and secondary GC columns differ by greater than a factor of 3.
Q	QC result does not meet tolerance in Protocol Specification.
R	Result reported elsewhere.
S	Analyte concentration obtained using Method of Standard Additions (MSA).
T	Second column confirmational analysis not performed.
X	See Narrative for explanation.
Y	See Narrative for explanation.
Z	See Narrative for explanation.

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-0.25		OFPT-EL01-0.25		OFPT-EL01-002		OFPT-EL01-002	
Lab ID:	9605489-01A		9605489-01B		9605489-02A		9605489-02C	
File ID:	F0601625		F0601636		F0601626		F0601648	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 08:36:00		06/02/96 15:44:00		06/02/96 09:00:00		06/02/96 22:37:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	41.1	NA	411	ND	41.1	NA	411
Benzene	4.78 BJ	9.50	NA	95.0	5.04 BJ	9.50	NA	95.0
Bromobenzene	ND	7.74	NA	77.4	ND	7.74	NA	77.4
Bromodichloromethane	ND	9.44	NA	94.4	ND	9.44	NA	94.4
Bromoform	ND	12.8	NA	128	ND	12.8	NA	128
Bromomethane	ND	15.2	NA	152	ND	15.2	NA	152
2-Butanone (MEK)	ND	123	NA	1230	ND	123	NA	1230
Carbon disulfide	ND	11.7	NA	117	ND	11.7	NA	117
Carbon tetrachloride	ND	7.90	NA	79.0	ND	7.90	NA	79.0
Chlorobenzene	ND	9.98	NA	99.8	ND	9.98	NA	99.8
Chloroethane	ND	10.4	NA	104	ND	10.4	NA	104
2-Chloroethyl vinyl ether	ND	12.9	NA	129	ND	12.9	NA	129
Chloroform	ND	11.6	NA	116	3.21 J	11.6	NA	116
1-Chlorohexane	ND	18.6	NA	186	ND	18.6	NA	186
Chloromethane	ND	6.81	NA	68.1	ND	6.81	NA	68.1
3-Chloropropene	ND	11.0	NA	110	ND	11.0	NA	110
1,2-Dibromo-3-chloropropane	ND	59.1	NA	591	ND	59.1	NA	591
Dibromochloromethane	ND	6.81	NA	68.1	ND	6.81	NA	68.1
1,2-Dibromoethane	ND	12.1	NA	121	ND	12.1	NA	121
Dibromomethane	ND	10.4	NA	104	ND	10.4	NA	104

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-0.25		OFPT-EL01-0.25		OFPT-EL01-002		OFPT-EL01-002	
Lab ID:	9605489-01A		9605489-01B		9605489-02A		9605489-02C	
File ID:	F0601625		F0601636		F0601626		F0601648	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 08:36:00		06/02/96 15:44:00		06/02/96 09:00:00		06/02/96 22:37:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	23.2	NA	232	ND	23.2	NA	232
1,2-Dichlorobenzene	ND	16.5	NA	165	ND	16.5	NA	165
1,3-Dichlorobenzene	ND	15.9	NA	159	ND	15.9	NA	159
1,4-Dichlorobenzene	ND	18.4	NA	184	ND	18.4	NA	184
Dichlorodifluoromethane	ND	12.8	NA	128	ND	12.8	NA	128
1,1-Dichloroethane	ND	8.38	NA	83.8	ND	8.38	NA	83.8
1,2-Dichloroethane	ND	13.0	NA	130	ND	13.0	NA	130
1,1-Dichloroethene	ND	9.12	NA	91.2	ND	9.12	NA	91.2
cis-1,2-Dichloroethene	1750	8.12	NA	81.2	2140	8.12	NA	81.2
trans-1,2-Dichloroethene	ND	8.50	NA	85.0	8.54	8.50	NA	85.0
1,2-Dichloropropane	ND	8.49	NA	84.9	ND	8.49	NA	84.9
cis-1,3-Dichloropropene	ND	9.21	NA	92.1	ND	9.21	NA	92.1
trans-1,3-Dichloropropene	ND	9.86	NA	98.6	ND	9.86	NA	98.6
Ethyl methacrylate	ND	11.8	NA	118	ND	11.8	NA	118
Ethylbenzene	1.46 BJ	9.82	NA	98.2	ND	9.82	NA	98.2
2-Hexanone	ND	31.6	NA	316	ND	31.6	NA	316
Iodomethane	ND	5.13	NA	51.3	ND	5.13	NA	51.3
Methyl methacrylate	ND	9.70	NA	97.0	ND	9.70	NA	97.0
4-Methyl-2-pentanone(MIBK)	ND	21.9	NA	219	ND	21.9	NA	219
Methylene chloride	101 B	17.4	NA	174	101 B	17.4	NA	174

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-0.25		OFPT-EL01-0.25		OFPT-EL01-002		OFPT-EL01-002	
Lab ID:	9605489-01A		9605489-01B		9605489-02A		9605489-02C	
File ID:	F0601625		F0601636		F0601626		F0601648	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 08:36:00		06/02/96 15:44:00		06/02/96 09:00:00		06/02/96 22:37:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	8.94	NA	89.4	ND	8.94	NA	89.4
1,1,1,2-Tetrachloroethane	ND	8.85	NA	88.5	ND	8.85	NA	88.5
1,1,2,2-Tetrachloroethane	ND	10.9	NA	109	ND	10.9	NA	109
Tetrachloroethene	2.80 J	17.7	NA	177	4.29 J	17.7	NA	177
Toluene	ND	8.06	NA	80.6	ND	8.06	NA	80.6
1,1,1-Trichloroethane	ND	5.82	NA	58.2	ND	5.82	NA	58.2
1,1,2-Trichloroethane	ND	10.7	NA	107	ND	10.7	NA	107
Trichloroethene	20900 ER	19.0	22700	190	25800 ER	19.0	30200	190
Trichlorofluoromethane	ND	10.2	NA	102	ND	10.2	NA	102
1,2,3-Trichloropropane	ND	18.8	NA	188	ND	18.8	NA	188
1,1,2-Trichlorotrifluoroethane	ND	14.5	NA	145	6.88 J	14.5	NA	145
Vinyl acetate	ND	9.58	NA	95.8	ND	9.58	NA	95.8
Vinyl chloride	ND	4.60	NA	46.0	ND	4.60	NA	46.0
m&p-Xylene	7.46 BJ	27.6	NA	276	ND	27.6	NA	276
o-Xylene	ND	9.40	NA	94.0	ND	9.40	NA	94.0

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-0.25	OFPT-EL01-0.25	OFPT-EL01-002	OFPT-EL01-002
Lab ID:	9605489-01A	9605489-01B	9605489-02A	9605489-02C
File ID:	F0601625	F0601636	F0601626	F0601648
Date Collected:	05/19/96	05/19/96	05/19/96	05/19/96
Date Prepared:				
Date Analyzed:	06/02/96 08:36:00	06/02/96 15:44:00	06/02/96 09:00:00	06/02/96 22:37:00
Dilution Factor:	150	1500	150	1500
Matrix:	Water	Water	Water	Water
Units:	ug/L	ug/L	ug/L	ug/L
Report as:	received	received	received	received
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	97	98	97	98
1,2-Dichloroethane-d4	102	102	102	103
Toluene-d8	100	100	99	99

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-004		OFPT-EL01-004		OFPT-EL01-008		OFPT-EL01-008	
Lab ID:	9605489-03A		9605489-03B		9605489-05A		9605489-05C	
File ID:	F0601628		F0601638		F0601629		F0601649	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 09:49:00		06/02/96 16:33:00		06/02/96 10:13:00		06/02/96 23:00:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	41.1	NA	411	ND	41.1	NA	411
Benzene	5.72 BJ	9.50	NA	95.0	5.48 BJ	9.50	NA	95.0
Bromobenzene	ND	7.74	NA	77.4	ND	7.74	NA	77.4
Bromodichloromethane	ND	9.44	NA	94.4	ND	9.44	NA	94.4
Bromoform	ND	12.8	NA	128	ND	12.8	NA	128
Bromomethane	ND	15.2	NA	152	ND	15.2	NA	152
2-Butanone (MEK)	ND	123	NA	1230	ND	123	NA	1230
Carbon disulfide	ND	11.7	NA	117	ND	11.7	NA	117
Carbon tetrachloride	ND	7.90	NA	79.0	ND	7.90	NA	79.0
Chlorobenzene	ND	9.98	NA	99.8	ND	9.98	NA	99.8
Chloroethane	ND	10.4	NA	104	ND	10.4	NA	104
2-Chloroethyl vinyl ether	ND	12.9	NA	129	ND	12.9	NA	129
Chloroform	4.92 J	11.6	NA	116	2.60 J	11.6	NA	116
1-Chlorohexane	ND	18.6	NA	186	ND	18.6	NA	186
Chloromethane	ND	6.81	NA	68.1	ND	6.81	NA	68.1
3-Chloropropene	ND	11.0	NA	110	ND	11.0	NA	110
1,2-Dibromo-3-chloropropane	ND	59.1	NA	591	ND	59.1	NA	591
Dibromochloromethane	ND	6.81	NA	68.1	ND	6.81	NA	68.1
1,2-Dibromoethane	ND	12.1	NA	121	ND	12.1	NA	121
Dibromomethane	6.57 J	10.4	NA	104	ND	10.4	NA	104

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-004		OFPT-EL01-004		OFPT-EL01-008		OFPT-EL01-008	
Lab ID:	9605489-03A		9605489-03B		9605489-05A		9605489-05C	
File ID:	F0601628		F0601638		F0601629		F0601649	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 09:49:00		06/02/96 16:33:00		06/02/96 10:13:00		06/02/96 23:00:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	23.2	NA	232	ND	23.2	NA	232
1,2-Dichlorobenzene	ND	16.5	NA	165	ND	16.5	NA	165
1,3-Dichlorobenzene	ND	15.9	NA	159	ND	15.9	NA	159
1,4-Dichlorobenzene	ND	18.4	NA	184	ND	18.4	NA	184
Dichlorodifluoromethane	ND	12.8	NA	128	ND	12.8	NA	128
1,1-Dichloroethane	ND	8.38	NA	83.8	ND	8.38	NA	83.8
1,2-Dichloroethane	ND	13.0	NA	130	ND	13.0	NA	130
1,1-Dichloroethene	ND	9.12	NA	91.2	ND	9.12	NA	91.2
cis-1,2-Dichloroethene	2040	8.12	NA	81.2	1910	8.12	NA	81.2
trans-1,2-Dichloroethene	8.82	8.50	NA	85.0	10.7	8.50	NA	85.0
1,2-Dichloropropane	ND	8.49	NA	84.9	ND	8.49	NA	84.9
cis-1,3-Dichloropropene	ND	9.21	NA	92.1	ND	9.21	NA	92.1
trans-1,3-Dichloropropene	ND	9.86	NA	98.6	ND	9.86	NA	98.6
Ethyl methacrylate	ND	11.8	NA	118	ND	11.8	NA	118
Ethylbenzene	2.74 BJ	9.82	NA	98.2	ND	9.82	NA	98.2
2-Hexanone	ND	31.6	NA	316	ND	31.6	NA	316
Iodomethane	ND	5.13	NA	51.3	ND	5.13	NA	51.3
Methyl methacrylate	ND	9.70	NA	97.0	ND	9.70	NA	97.0
4-Methyl-2-pentanone(MIBK)	ND	21.9	NA	219	ND	21.9	NA	219
Methylene chloride	102 B	17.4	NA	174	97.1 B	17.4	NA	174

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-004		OFPT-EL01-004		OFPT-EL01-008		OFPT-EL01-008	
Lab ID:	9605489-03A		9605489-03B		9605489-05A		9605489-05C	
File ID:	F0601628		F0601638		F0601629		F0601649	
Date Collected:	05/19/96		05/19/96		05/19/96		05/19/96	
Date Prepared:								
Date Analyzed:	06/02/96 09:49:00		06/02/96 16:33:00		06/02/96 10:13:00		06/02/96 23:00:00	
Dilution Factor:	150		1500		150		1500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	8.94	NA	89.4	ND	8.94	NA	89.4
1,1,1,2-Tetrachloroethane	ND	8.85	NA	88.5	ND	8.85	NA	88.5
1,1,2,2-Tetrachloroethane	ND	10.9	NA	109	ND	10.9	NA	109
Tetrachloroethene	ND	17.7	NA	177	ND	17.7	NA	177
Toluene	ND	8.06	NA	80.6	ND	8.06	NA	80.6
1,1,1-Trichloroethane	ND	5.82	NA	58.2	ND	5.82	NA	58.2
1,1,2-Trichloroethane	ND	10.7	NA	107	ND	10.7	NA	107
Trichloroethene	25100 ER	19.0	28500	190	24000 ER	19.0	24700	190
Trichlorofluoromethane	ND	10.2	NA	102	ND	10.2	NA	102
1,2,3-Trichloropropane	ND	18.8	NA	188	ND	18.8	NA	188
1,1,2-Trichlorotrifluoroethane	5.98 J	14.5	NA	145	ND	14.5	NA	145
Vinyl acetate	ND	9.58	NA	95.8	ND	9.58	NA	95.8
Vinyl chloride	ND	4.60	NA	46.0	ND	4.60	NA	46.0
m&p-Xylene	ND	27.6	NA	276	ND	27.6	NA	276
o-Xylene	ND	9.40	NA	94.0	ND	9.40	NA	94.0

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL01-004	OFPT-EL01-004	OFPT-EL01-008	OFPT-EL01-008
Lab ID:	9605489-03A	9605489-03B	9605489-05A	9605489-05C
File ID:	F0601628	F0601638	F0601629	F0601649
Date Collected:	05/19/96	05/19/96	05/19/96	05/19/96
Date Prepared:				
Date Analyzed:	06/02/96 09:49:00	06/02/96 16:33:00	06/02/96 10:13:00	06/02/96 23:00:00
Dilution Factor:	150	1500	150	1500
Matrix:	Water	Water	Water	Water
Units:	ug/L	ug/L	ug/L	ug/L
Report as:	received	received	received	received
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	99	95	97	99
1,2-Dichloroethane-d4	101	104	102	102
Toluene-d8	100	100	100	102

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL02-024		OFPT-EL02-028		OFPT-EL02-032		OFPT-GW00-MP2	
Lab ID:	9605489-07B		9605489-09C		9605489-10C		9605489-08A	
File ID:	F0601641		F0603614		F0603615		F0601624	
Date Collected:	05/20/96		05/20/96		05/20/96		05/20/96	
Date Prepared:								
Date Analyzed:	06/02/96 17:46:00		06/03/96 15:13:00		06/03/96 15:38:00		06/02/96 08:12:00	
Dilution Factor:	1500		1500		1500		1	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	411	ND	411	ND	411	3.75	0.274
Benzene	ND	95.0	71.8 BJ	95.0	42.6 BJ	95.0	0.0560 BJ	0.0633
Bromobenzene	ND	77.4	ND	77.4	ND	77.4	ND	0.0516
Bromodichloromethane	ND	94.4	ND	94.4	ND	94.4	1.65	0.0629
Bromoform	ND	128	ND	128	ND	128	2.52	0.0854
Bromomethane	ND	152	ND	152	ND	152	ND	0.101
2-Butanone (MEK)	ND	1230	ND	1230	ND	1230	ND	0.819
Carbon disulfide	ND	117	ND	117	ND	117	0.149	0.0780
Carbon tetrachloride	ND	79.0	ND	79.0	ND	79.0	0.924	0.0527
Chlorobenzene	ND	99.8	ND	99.8	ND	99.8	ND	0.0665
Chloroethane	ND	104	ND	104	ND	104	ND	0.0693
2-Chloroethyl vinyl ether	ND	129	ND	129	ND	129	ND	0.0862
Chloroform	ND	116	ND	116	ND	116	3.86	0.0773
1-Chlorohexane	ND	186	ND	186	62.1 J	186	ND	0.124
Chloromethane	ND	68.1	ND	68.1	ND	68.1	ND	0.0454
3-Chloropropene	ND	110	ND	110	ND	110	ND	0.0735
1,2-Dibromo-3-chloropropane	ND	591	ND	591	ND	591	ND	0.394
Dibromochloromethane	ND	68.1	ND	68.1	ND	68.1	2.87	0.0454
1,2-Dibromoethane	ND	121	ND	121	ND	121	ND	0.0808
Dibromomethane	ND	104	ND	104	ND	104	ND	0.0692

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL02-024		OFPT-EL02-028		OFPT-EL02-032		OFPT-GW00-MP2	
Lab ID:	9605489-07B		9605489-09C		9605489-10C		9605489-08A	
File ID:	F0601641		F0603614		F0603615		F0601624	
Date Collected:	05/20/96		05/20/96		05/20/96		05/20/96	
Date Prepared:								
Date Analyzed:	06/02/96 17:46:00		06/03/96 15:13:00		06/03/96 15:38:00		06/02/96 08:12:00	
Dilution Factor:	1500		1500		1500		1	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	232	ND	232	ND	232	ND	0.155
1,2-Dichlorobenzene	ND	165	ND	165	ND	165	ND	0.110
1,3-Dichlorobenzene	ND	159	ND	159	ND	159	ND	0.106
1,4-Dichlorobenzene	ND	184	ND	184	ND	184	ND	0.123
Dichlorodifluoromethane	ND	128	ND	128	ND	128	ND	0.0853
1,1-Dichloroethane	ND	83.8	ND	83.8	ND	83.8	ND	0.0559
1,2-Dichloroethane	ND	130	ND	130	ND	130	ND	0.0865
1,1-Dichloroethene	ND	91.2	ND	91.2	ND	91.2	ND	0.0608
cis-1,2-Dichloroethene	1110	81.2	1380	81.2	1380	81.2	~~58.5 BR~~	0.0541
trans-1,2-Dichloroethene	ND	85.0	ND	85.0	ND	85.0	0.361	0.0567
1,2-Dichloropropane	ND	84.9	ND	84.9	ND	84.9	ND	0.0566
cis-1,3-Dichloropropene	ND	92.1	ND	92.1	ND	92.1	ND	0.0614
trans-1,3-Dichloropropene	ND	98.6	ND	98.6	ND	98.6	ND	0.0657
Ethyl methacrylate	ND	118	ND	118	ND	118	ND	0.0788
Ethylbenzene	ND	98.2	16.6 J	98.2	36.2 J	98.2	ND	0.0655
2-Hexanone	ND	316	ND	316	ND	316	ND	0.211
Iodomethane	ND	51.3	ND	51.3	ND	51.3	ND	0.0342
Methyl methacrylate	ND	97.0	ND	97.0	ND	97.0	ND	0.0647
4-Methyl-2-pentanone (MIBK)	ND	219	ND	219	ND	219	ND	0.146
Methylene chloride	1210 B	174	1330 B	174	1630 B	174	0.780 B	0.116

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL02-024		OFPT-EL02-028		OFPT-EL02-032		OFPT-GW00-MP2	
Lab ID:	9605489-07B		9605489-09C		9605489-10C		9605489-08A	
File ID:	F0601641		F0603614		F0603615		F0601624	
Date Collected:	05/20/96		05/20/96		05/20/96		05/20/96	
Date Prepared:								
Date Analyzed:	06/02/96 17:46:00		06/03/96 15:13:00		06/03/96 15:38:00		06/02/96 08:12:00	
Dilution Factor:	1500		1500		1500		1	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	89.4	ND	89.4	ND	89.4	ND	0.0596
1,1,1,2-Tetrachloroethane	ND	88.5	ND	88.5	ND	88.5	ND	0.0590
1,1,2,2-Tetrachloroethane	ND	109	ND	109	ND	109	ND	0.0729
Tetrachloroethene	ND	177	60.2 J	177	166 J	177	1.32	0.118
Toluene	ND	80.6	ND	80.6	ND	80.6	0.0759	0.0537
1,1,1-Trichloroethane	ND	58.2	ND	58.2	ND	58.2	ND	0.0388
1,1,2-Trichloroethane	ND	107	ND	107	ND	107	ND	0.0714
Trichloroethene	20700	190	20600	190	21300	190	412 ER	0.127
Trichlorofluoromethane	ND	102	ND	102	ND	102	ND	0.0681
1,2,3-Trichloropropane	ND	188	ND	188	ND	188	ND	0.125
1,1,2-Trichlorotrifluoroethane	ND	145	ND	145	ND	145	1.15	0.0967
Vinyl acetate	ND	95.8	ND	95.8	ND	95.8	ND	0.0639
Vinyl chloride	ND	46.0	ND	46.0	ND	46.0	ND	0.0307
m&p-Xylene	ND	276	ND	276	146 J	276	ND	0.184
o-Xylene	ND	94.0	ND	94.0	ND	94.0	ND	0.0627

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL02-024	OFPT-EL02-028	OFPT-EL02-032	OFPT-GW00-MP2
Lab ID:	9605489-07B	9605489-09C	9605489-10C	9605489-08A
File ID:	F0601641	F0603614	F0603615	F0601624
Date Collected:	05/20/96	05/20/96	05/20/96	05/20/96
Date Prepared:				
Date Analyzed:	06/02/96 17:46:00	06/03/96 15:13:00	06/03/96 15:38:00	06/02/96 08:12:00
Dilution Factor:	1500	1500	1500	1
Matrix:	Water	Water	Water	Water
Units:	ug/L	ug/L	ug/L	ug/L
Report as:	received	received	received	received
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	96	103	98	98
1,2-Dichloroethane-d4	103	79	104	103
Toluene-d8	101	102	100	100

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-GW00-MP2		OFPT-LD01-008		OFPT-LTB0-N01			
Lab ID:	9605489-08C		9605489-06C		9605489-04A			
File ID:	F0603613		F0601650		F0601617			
Date Collected:	05/20/96		05/19/96		05/19/96			
Date Prepared:								
Date Analyzed:	06/03/96 14:51:00		06/02/96 23:23:00		06/02/96 05:21:00			
Dilution Factor:	30		500		1			
Matrix:	Water		Water		Water			
Units:	ug/L		ug/L		ug/L			
Report as:	received		received		received			
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	~~894~~	8.22	ND	137	ND	0.274		
Benzene	~~X~~ 1.01 BJ	1.90	15.6 BJ	31.6	ND	0.0633		
Bromobenzene	ND	1.55	ND	25.8	ND	0.0516		
Bromodichloromethane	ND	1.89	ND	31.4	ND	0.0629		
Bromoform	ND	2.56	ND	42.7	ND	0.0854		
Bromomethane	ND	3.03	ND	50.5	ND	0.101		
2-Butanone (MEK)	ND	24.6	ND	410	ND	0.819		
Carbon disulfide	ND	2.34	ND	39.0	ND	0.0780		
Carbon tetrachloride	ND	1.58	ND	26.4	ND	0.0527		
Chlorobenzene	ND	2.00	ND	33.2	ND	0.0665		
Chloroethane	ND	2.08	ND	34.6	ND	0.0693		
2-Chloroethyl vinyl ether	ND Either	2.59	ND	43.1	ND	0.0862		
Chloroform	4.65	2.32	ND	38.6	ND	0.0773		
1-Chlorohexane	ND	3.72	ND	62.0	ND	0.124		
Chloromethane	ND	1.36	ND	22.7	ND	0.0454		
3-Chloropropene	ND	2.20	ND	36.8	ND	0.0735		
1,2-Dibromo-3-chloropropane	ND	11.8	ND	197	ND	0.394		
Dibromochloromethane	ND	1.36	ND	22.7	ND	0.0454		
1,2-Dibromoethane	ND	2.42	ND	40.4	ND	0.0808		
Dibromomethane	ND	2.08	ND	34.6	ND	0.0692		

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-GW00-MP2		OFPT-LD01-008		OFPT-LTB0-N01			
Lab ID:	9605489-08C		9605489-06C		9605489-04A			
File ID:	F0603613		F0601650		F0601617			
Date Collected:	05/20/96		05/19/96		05/19/96			
Date Prepared:								
Date Analyzed:	06/03/96 14:51:00		06/02/96 23:23:00		06/02/96 05:21:00			
Dilution Factor:	30		500		1			
Matrix:	Water		Water		Water			
Units:	ug/L		ug/L		ug/L			
Report as:	received		received		received			
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	4.65	ND	77.5	ND	0.155		
1,2-Dichlorobenzene	ND	3.30	ND	55.0	ND	0.110		
1,3-Dichlorobenzene	ND	3.18	ND	53.0	ND	0.106		
1,4-Dichlorobenzene	ND	3.69	ND	61.5	ND	0.123		
Dichlorodifluoromethane	ND	2.56	ND	42.6	ND	0.0853		
1,1-Dichloroethane	ND	1.68	ND	28.0	ND	0.0559		
1,2-Dichloroethane	ND	2.60	ND	43.2	ND	0.0865		
1,1-Dichloroethene	ND	1.82	ND	30.4	ND	0.0608		
cis-1,2-Dichloroethene	85.8	1.62	1800	27.0	ND	0.0541		
trans-1,2-Dichloroethene	ND	1.70	ND	28.4	ND	0.0567		
1,2-Dichloropropane	ND	1.70	ND	28.3	ND	0.0566		
cis-1,3-Dichloropropene	ND	1.84	ND	30.7	ND	0.0614		
trans-1,3-Dichloropropene	ND	1.97	ND	32.8	ND	0.0657		
Ethyl methacrylate	ND	2.36	ND	39.4	ND	0.0788		
Ethylbenzene	0.693 J	1.96	ND	32.8	0.00910 BJ	0.0655		
2-Hexanone	ND	6.33	ND	106	ND	0.211		
Iodomethane	ND	1.03	ND	17.1	ND	0.0342		
Methyl methacrylate	ND	1.94	ND	32.4	ND	0.0647		
4-Methyl-2-pentanone (MIBK)	ND	4.38	ND	73.0	ND	0.146		
Methylene chloride	2.0 B	3.48	236 B	58.0	0.784 B	0.116		

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-GW00-MP2		OFPT-LD01-008		OFPT-LTB0-N01			
Lab ID:	9605489-08C		9605489-06C		9605489-04A			
File ID:	F0603613		F0601650		F0601617			
Date Collected:	05/20/96		05/19/96		05/19/96			
Date Prepared:								
Date Analyzed:	06/03/96 14:51:00		06/02/96 23:23:00		06/02/96 05:21:00			
Dilution Factor:	30		500		1			
Matrix:	Water		Water		Water			
Units:	ug/L		ug/L		ug/L			
Report as:	received		received		received			
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	1.79	ND	29.8	ND	0.0596		
1,1,1,2-Tetrachloroethane	ND	1.77	ND	29.5	ND	0.0590		
1,1,2,2-Tetrachloroethane	ND	2.19	ND	36.4	ND	0.0729		
Tetrachloroethene	6.72	3.54	ND	59.0	ND	0.118		
Toluene	ND	1.61	ND	26.8	ND	0.0537		
1,1,1-Trichloroethane	ND	1.16	ND	19.4	ND	0.0388		
1,1,2-Trichloroethane	ND	2.14	ND	35.7	ND	0.0714		
Trichloroethene	1260	3.81	25400	63.5	ND	0.127		
Trichlorofluoromethane	ND	2.04	ND	34.0	ND	0.0681		
1,2,3-Trichloropropane	ND	3.75	ND	62.5	ND	0.125		
1,1,2-Trichlorotrifluoroethane	1.81 J	2.90	ND	48.4	ND	0.0967		
Vinyl acetate	ND	1.92	ND	32.0	ND	0.0639		
Vinyl chloride	ND	0.921	ND	15.4	ND	0.0307		
m&p-Xylene	0.44 J	5.52	ND	92.0	0.0620 BJ	0.184		
o-Xylene	ND	1.88	ND	31.4	ND	0.0627		

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-GW00-MP2		OFPT-LD01-008		OFPT-LTB0-N01			
Lab ID:	9605489-08C		9605489-06C		9605489-04A			
File ID:	F0603613		F0601650		F0601617			
Date Collected:	05/20/96		05/19/96		05/19/96			
Date Prepared:								
Date Analyzed:	06/03/96 14:51:00		06/02/96 23:23:00		06/02/96 05:21:00			
Dilution Factor:	30		500		1			
Matrix:	Water		Water		Water			
Units:	ug/L		ug/L		ug/L			
Report as:	received		received		received			
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	98	99	96	
1,2-Dichloroethane-d4	102	105	100	
Toluene-d8	100	100	100	

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-056	
Lab ID:	9605514-01A		9605514-01B		9605514-01C		9605514-02A	
File ID:	G0530629		G0530631		G0603625		G0603626	
Date Collected:	05/21/96		05/21/96		05/21/96		05/21/96	
Date Prepared:								
Date Analyzed:	05/31/96 07:13:00		05/31/96 09:02:00		06/03/96 21:18:00		06/03/96 21:46:00	
Dilution Factor:	1		100		1000		500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	1.26	NA	126	ND	1260	ND	630
Benzene	0.109	0.0470	NA	4.70	ND	47.0	ND	23.5
Bromobenzene	ND	0.0543	NA	5.43	ND	54.3	ND	27.2
Bromodichloromethane	ND	0.0698	NA	6.98	ND	69.8	ND	34.9
Bromoform	ND	0.160	NA	16.0	ND	160	ND	80.0
Bromomethane	ND	0.190	NA	19.0	ND	190	ND	95.0
2-Butanone(MEK)	ND	0.289	NA	28.9	ND	289	ND	144
Carbon disulfide	ND	0.0786	NA	7.86	ND	78.6	ND	39.3
Carbon tetrachloride	0.714	0.113	NA	11.3	ND	113	ND	56.5
Chlorobenzene	ND	0.0688	NA	6.88	ND	68.8	ND	34.4
Chloroethane	ND	0.114	NA	11.4	ND	114	ND	57.0
2-Chloroethyl vinyl ether	ND	0.0864	NA	8.64	ND	86.4	ND	43.2
Chloroform	3.18	0.122	NA	12.2	ND	122	ND	61.0
1-Chlorohexane	ND	0.0804	NA	8.04	ND	80.4	ND	40.2
Chloromethane	ND	0.141	NA	14.1	ND	141	ND	70.5
3-Chloropropene	ND	0.0951	NA	9.51	ND	95.1	ND	47.6
1,2-Dibromo-3-chloropropane	ND	1.05	NA	105	ND	1050	ND	525
Dibromochloromethane	ND	0.166	NA	16.6	ND	166	ND	83.0
1,2-Dibromoethane	ND	0.129	NA	12.9	ND	129	ND	64.5
Dibromomethane	ND	0.169	NA	16.9	ND	169	ND	84.5

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-056	
Lab ID:	9605514-01A		9605514-01B		9605514-01C		9605514-02A	
File ID:	G0530629		G0530631		G0603625		G0603626	
Date Collected:	05/21/96		05/21/96		05/21/96		05/21/96	
Date Prepared:								
Date Analyzed:	05/31/96 07:13:00		05/31/96 09:02:00		06/03/96 21:18:00		06/03/96 21:46:00	
Dilution Factor:	1		100		1000		500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	0.512	NA	51.2	ND	512	ND	256
1,2-Dichlorobenzene	ND	0.105	NA	10.5	ND	105	ND	52.5
1,3-Dichlorobenzene	ND	0.0592	NA	5.92	ND	59.2	ND	29.6
1,4-Dichlorobenzene	ND	0.0701	NA	7.01	ND	70.1	ND	35.0
Dichlorodifluoromethane	ND	0.235	NA	23.5	ND	235	ND	118
1,1-Dichloroethane	ND	0.0864	NA	8.64	ND	86.4	ND	43.2
1,2-Dichloroethane	ND	0.125	NA	12.5	ND	125	ND	62.5
1,1-Dichloroethene	0.222	0.0767	NA	7.67	ND	76.7	ND	38.4
cis-1,2-Dichloroethene	524 ER	0.0831	964	8.31	912	83.1	898	41.6
trans-1,2-Dichloroethene	4.44	0.103	NA	10.3	ND	103	ND	51.5
1,2-Dichloropropane	ND	0.0853	NA	8.53	ND	85.3	ND	42.6
cis-1,3-Dichloropropene	ND	0.0545	NA	5.45	ND	54.5	ND	27.2
trans-1,3-Dichloropropene	ND	0.0732	NA	7.32	ND	73.2	ND	36.6
Ethyl methacrylate	ND	0.0914	NA	9.14	ND	91.4	ND	45.7
Ethylbenzene	ND	0.107	NA	10.7	69.0 J	107	ND	53.5
2-Hexanone	ND	0.193	NA	19.3	ND	193	ND	96.5
Iodomethane	ND	0.0553	NA	5.53	ND	55.3	ND	27.6
Methyl methacrylate	ND	0.219	NA	21.9	ND	219	ND	110
4-Methyl-2-pentanone(MIBK)	ND	0.172	NA	17.2	ND	172	ND	86.0
Methylene chloride	0.158 BJ	0.159	NA	15.9	168 B	159	94.5 B	79.5

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-048		OFPT-EL03-056	
Lab ID:	9605514-01A		9605514-01B		9605514-01C		9605514-02A	
File ID:	G0530629		G0530631		G0603625		G0603626	
Date Collected:	05/21/96		05/21/96		05/21/96		05/21/96	
Date Prepared:								
Date Analyzed:	05/31/96 07:13:00		05/31/96 09:02:00		06/03/96 21:18:00		06/03/96 21:46:00	
Dilution Factor:	1		100		1000		500	
Matrix:	Water		Water		Water		Water	
Units:	ug/L		ug/L		ug/L		ug/L	
Report as:	received		received		received		received	
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	0.0981	NA	9.81	ND	98.1	ND	49.0
1,1,1,2-Tetrachloroethane	ND	0.141	NA	14.1	ND	141	ND	70.5
1,1,2,2-Tetrachloroethane	ND	0.227	NA	22.7	ND	227	ND	114
Tetrachloroethene	0.883	0.0959	NA	9.59	ND	95.9	ND	48.0
Toluene	0.168	0.0619	NA	6.19	ND	61.9	ND	31.0
1,1,1-Trichloroethane	ND	0.0927	NA	9.27	ND	92.7	ND	46.4
1,1,2-Trichloroethane	1.15	0.179	NA	17.9	ND	179	ND	89.5
Trichloroethene	2900 ER	0.0931	15800 ER	9.31	15000	93.1	14400	46.6
Trichlorofluoromethane	ND	0.336	NA	33.6	ND	336	ND	168
1,2,3-Trichloropropane	ND	0.256	NA	25.6	ND	256	ND	128
1,1,2-Trichlorotrifluoroethane	3.71	0.138	NA	13.8	ND	138	ND	69.0
Vinyl acetate	ND	0.0525	NA	5.25	ND	52.5	ND	26.2
Vinyl chloride	0.268	0.232	NA	23.2	ND	232	ND	116
m&p-Xylene	ND	0.131	NA	13.1	ND	131	ND	65.5
o-Xylene	ND	0.0789	NA	7.89	ND	78.9	ND	39.4

Method Volatile Organics SW8260A

Test Code 826SWAPP

Project Sample ID:	OFPT-EL03-048	OFPT-EL03-048	OFPT-EL03-048	OFPT-EL03-056
Lab ID:	9605514-01A	9605514-01B	9605514-01C	9605514-02A
File ID:	G0530629	G0530631	G0603625	G0603626
Date Collected:	05/21/96	05/21/96	05/21/96	05/21/96
Date Prepared:				
Date Analyzed:	05/31/96 07:13:00	05/31/96 09:02:00	06/03/96 21:18:00	06/03/96 21:46:00
Dilution Factor:	1	100	1000	500
Matrix:	Water	Water	Water	Water
Units:	ug/L	ug/L	ug/L	ug/L
Report as:	received	received	received	received
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	96	95	96	94
1,2-Dichloroethane-d4	96	96	98	101
Toluene-d8	99	100	100	103

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LD03-056							
Lab ID:	9605514-03A							
File ID:	G0603627							
Date Collected:	05/21/96							
Date Prepared:								
Date Analyzed:	06/03/96 22:15:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	630						
Benzene	ND	23.5						
Bromobenzene	ND	27.2						
Bromodichloromethane	ND	34.9						
Bromoform	ND	80.0						
Bromomethane	ND	95.0						
2-Butanone(MEK)	ND	144						
Carbon disulfide	ND	39.3						
Carbon tetrachloride	ND	56.5						
Chlorobenzene	ND	34.4						
Chloroethane	ND	57.0						
2-Chloroethyl vinyl ether	ND	43.2						
Chloroform	ND	61.0						
1-Chlorohexane	ND	40.2						
Chloromethane	ND	70.5						
3-Chloropropene	ND	47.6						
1,2-Dibromo-3-chloropropane	ND	525						
Dibromochloromethane	ND	83.0						
1,2-Dibromoethane	ND	64.5						
Dibromomethane	ND	84.5						

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LD03-056							
Lab ID:	9605514-03A							
File ID:	G0603627							
Date Collected:	05/21/96							
Date Prepared:								
Date Analyzed:	06/03/96 22:15:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	256						
1,2-Dichlorobenzene	ND	52.5						
1,3-Dichlorobenzene	ND	29.6						
1,4-Dichlorobenzene	ND	35.0						
Dichlorodifluoromethane	ND	118						
1,1-Dichloroethane	ND	43.2						
1,2-Dichloroethane	ND	62.5						
1,1-Dichloroethene	ND	38.4						
cis-1,2-Dichloroethene	934	41.6						
trans-1,2-Dichloroethene	ND	51.5						
1,2-Dichloropropane	ND	42.6						
cis-1,3-Dichloropropene	ND	27.2						
trans-1,3-Dichloropropene	ND	36.6						
Ethyl methacrylate	ND	45.7						
Ethylbenzene	ND	53.5						
2-Hexanone	ND	96.5						
Iodomethane	ND	27.6						
Methyl methacrylate	ND	110						
4-Methyl-2-pentanone(MIBK)	ND	86.0						
Methylene chloride	55.6 BJ	79.5						

RESULTS SUMMARY (Cont'd)

Work Order # 9605514

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-LD03-056							
Lab ID:	9605514-03A							
File ID:	G0603627							
Date Collected:	05/21/96							
Date Prepared:								
Date Analyzed:	06/03/96 22:15:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	49.0						
1,1,1,2-Tetrachloroethane	ND	70.5						
1,1,2,2-Tetrachloroethane	ND	114						
Tetrachloroethene	ND	48.0						
Toluene	ND	31.0						
1,1,1-Trichloroethane	ND	46.4						
1,1,2-Trichloroethane	ND	89.5						
Trichloroethene	14900	46.6						
Trichlorofluoromethane	ND	168						
1,2,3-Trichloropropane	ND	128						
1,1,2-Trichlorotrifluoroethane	ND	69.0						
Vinyl acetate	ND	26.2						
Vinyl chloride	ND	116						
m&p-Xylene	ND	65.5						
o-Xylene	ND	39.4						

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-LD03-056							
Lab ID:	9605514-03A							
File ID:	G0603627							
Date Collected:	05/21/96							
Date Prepared:								
Date Analyzed:	06/03/96 22:15:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	96			
1,2-Dichloroethane-d4.	100			
Toluene-d8	103			

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL04-076		OFPT-EL05-100			
Lab ID:	9605615-01A		9605615-02A			
File ID:	G0603651		G0603652			
Date Collected:	05/22/96		05/23/96			
Date Prepared:						
Date Analyzed:	06/04/96 15:25:00		06/04/96 15:53:00			
Dilution Factor:	500		500			
Matrix:	Water		Water			
Units:	ug/L		ug/L			
Report as:	received		received			
Column:						
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	630	ND	630			
Benzene	ND	23.5	ND	23.5			
Bromobenzene	ND	27.2	ND	27.2			
Bromodichloromethane	ND	34.9	ND	34.9			
Bromoform	ND	80.0	ND	80.0			
Bromomethane	ND	95.0	ND	95.0			
2-Butanone (MEK)	ND	144	ND	144			
Carbon disulfide	ND	39.3	ND	39.3			
Carbon tetrachloride	ND	56.5	ND	56.5			
Chlorobenzene	ND	34.4	ND	34.4			
Chloroethane	ND	57.0	ND	57.0			
2-Chloroethyl vinyl ether	ND	43.2	ND	43.2			
Chloroform	ND	61.0	ND	61.0			
1-Chlorohexane	ND	40.2	ND	40.2			
Chloromethane	ND	70.5	ND	70.5			
3-Chloropropene	ND	47.6	ND	47.6			
1,2-Dibromo-3-chloropropane	ND	525	ND	525			
Dibromochloromethane	ND	83.0	ND	83.0			
1,2-Dibromoethane	ND	64.5	ND	64.5			
Dibromomethane	ND	84.5	ND	84.5			

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL04-076		OFPT-EL05-100					
Lab ID:	9605615-01A		9605615-02A					
File ID:	G0603651		G0603652					
Date Collected:	05/22/96		05/23/96					
Date Prepared:								
Date Analyzed:	06/04/96 15:25:00		06/04/96 15:53:00					
Dilution Factor:	500		500					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	256	ND	256				
1,2-Dichlorobenzene	ND	52.5	ND	52.5				
1,3-Dichlorobenzene	ND	29.6	ND	29.6				
1,4-Dichlorobenzene	ND	35.0	ND	35.0				
Dichlorodifluoromethane	ND	118	ND	118				
1,1-Dichloroethane	ND	43.2	ND	43.2				
1,2-Dichloroethane	ND	62.5	ND	62.5				
1,1-Dichloroethene	ND	38.4	ND	38.4				
cis-1,2-Dichloroethene	621	41.6	700	41.6				
trans-1,2-Dichloroethene	ND	51.5	ND	51.5				
1,2-Dichloropropane	ND	42.6	ND	42.6				
cis-1,3-Dichloropropene	ND	27.2	ND	27.2				
trans-1,3-Dichloropropene	ND	36.6	ND	36.6				
Ethyl methacrylate	ND	45.7	ND	45.7				
Ethylbenzene	ND	53.5	ND	53.5				
2-Hexanone	ND	96.5	ND	96.5				
Iodomethane	ND	27.6	ND	27.6				
Methyl methacrylate	ND	110	ND	110				
4-Methyl-2-pentanone (MIBK)	ND	86.0	ND	86.0				
Methylene chloride	48.2 J	79.5	45.5 J	79.5				

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-EL04-076		OFPT-EL05-100					
Lab ID:	9605615-01A		9605615-02A					
File ID:	G0603651		G0603652					
Date Collected:	05/22/96		05/23/96					
Date Prepared:								
Date Analyzed:	06/04/96 15:25:00		06/04/96 15:53:00					
Dilution Factor:	500		500					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	49.0	ND	49.0				
1,1,1,2-Tetrachloroethane	ND	70.5	ND	70.5				
1,1,2,2-Tetrachloroethane	ND	114	ND	114				
Tetrachloroethene	ND	48.0	ND	48.0				
Toluene	ND	31.0	ND	31.0				
1,1,1-Trichloroethane	ND	46.4	ND	46.4				
1,1,2-Trichloroethane	ND	89.5	ND	89.5				
Trichloroethene	9900	46.6	10400	46.6				
Trichlorofluoromethane	ND	168	ND	168				
1,2,3-Trichloropropane	ND	128	ND	128				
1,1,2-Trichlorotrifluoroethane	ND	69.0	ND	69.0				
Vinyl acetate	ND	26.2	ND	26.2				
Vinyl chloride	ND	116	ND	116				
m&p-Xylene	ND	65.5	ND	65.5				
o-Xylene	ND	39.4	ND	39.4				

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL04-076	OFPT-EL05-100		
Lab ID:	9605615-01A	9605615-02A		
File ID:	G0603651	G0603652		
Date Collected:	05/22/96	05/23/96		
Date Prepared:				
Date Analyzed:	06/04/96 15:25:00	06/04/96 15:53:00		
Dilution Factor:	500	500		
Matrix:	Water	Water		
Units:	ug/L	ug/L		
Report as:	received	received		
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	97	95		
1,2-Dichloroethane-d4	102	105		
Toluene-d8	105	103		

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-EL06-124					
Lab ID:	9605636-01A					
File ID:	G0603650					
Date Collected:	05/24/96					
Date Prepared:						
Date Analyzed:	06/04/96 14:56:00					
Dilution Factor:	500					
Matrix:	Water					
Units:	ug/L					
Report as:	received					
Column:						
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	630						
Benzene	ND	23.5						
Bromobenzene	ND	27.2						
Bromodichloromethane	ND	34.9						
Bromoform	ND	80.0						
Bromomethane	ND	95.0						
2-Butanone (MEK)	ND	144						
Carbon disulfide	ND	39.3						
Carbon tetrachloride	ND	56.5						
Chlorobenzene	ND	34.4						
Chloroethane	ND	57.0						
2-Chloroethyl vinyl ether	ND	43.2						
Chloroform	ND	61.0						
1-Chlorohexane	ND	40.2						
Chloromethane	ND	70.5						
3-Chloropropene	ND	47.6						
1,2-Dibromo-3-chloropropane	ND	525						
Dibromochloromethane	ND	83.0						
1,2-Dibromoethane	ND	64.5						
Dibromomethane	ND	84.5						

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL06-124							
Lab ID:	9605636-01A							
File ID:	G0603650							
Date Collected:	05/24/96							
Date Prepared:								
Date Analyzed:	06/04/96 14:56:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	256						
1,2-Dichlorobenzene	ND	52.5						
1,3-Dichlorobenzene	ND	29.6						
1,4-Dichlorobenzene	ND	35.0						
Dichlorodifluoromethane	ND	118						
1,1-Dichloroethane	ND	43.2						
1,2-Dichloroethane	ND	62.5						
1,1-Dichloroethene	ND	38.4						
cis-1,2-Dichloroethene	658	41.6						
trans-1,2-Dichloroethene	ND	51.5						
1,2-Dichloropropane	ND	42.6						
cis-1,3-Dichloropropene	ND	27.2						
trans-1,3-Dichloropropene	ND	36.6						
Ethyl methacrylate	ND	45.7						
Ethylbenzene	ND	53.5						
2-Hexanone	ND	96.5						
Iodomethane	ND	27.6						
Methyl methacrylate	ND	110						
4-Methyl-2-pentanone(MIBK)	ND	86.0						
Methylene chloride	49.4 J	79.5						

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL06-124							
Lab ID:	9605636-01A							
File ID:	G0603650							
Date Collected:	05/24/96							
Date Prepared:								
Date Analyzed:	06/04/96 14:56:00							
Dilution Factor:	500							
Matrix:	Water							
Units:	ug/L							
Report as:	received							
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	49.0						
1,1,1,2-Tetrachloroethane	ND	70.5						
1,1,2,2-Tetrachloroethane	ND	114						
Tetrachloroethene	ND	48.0						
Toluene	ND	31.0						
1,1,1-Trichloroethane	ND	46.4						
1,1,2-Trichloroethane	ND	89.5						
Trichloroethene	10400	46.6						
Trichlorofluoromethane	ND	168						
1,2,3-Trichloropropane	ND	128						
1,1,2-Trichlorotrifluoroethane	ND	69.0						
Vinyl acetate	ND	26.2						
Vinyl chloride	ND	116						
m&p-Xylene	ND	65.5						
o-Xylene	ND	39.4						

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-EL06-124						
Lab ID:	9605636-01A						
File ID:	G0603650						
Date Collected:	05/24/96						
Date Prepared:							
Date Analyzed:	06/04/96 14:56:00						
Dilution Factor:	500						
Matrix:	Water						
Units:	ug/L						
Report as:	received						
Column:							
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	96			
1,2-Dichloroethane-d4	99			
Toluene-d8	103			

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL07-148		OFPT-GW07-AFT					
Lab ID:	9605646 01A		9605646-02A					
File ID:	G0603648		G0603649					
Date Collected:	05/25/96		05/25/96					
Date Prepared:								
Date Analyzed:	06/04/96 14:00:00		06/04/96 14:28:00					
Dilution Factor:	500		500					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	ND	630	ND	630				
Benzene	ND	23.5	ND	23.5				
Bromobenzene	ND	27.2	ND	27.2				
Bromodichloromethane	ND	34.9	ND	34.9				
Bromoform	ND	80.0	ND	80.0				
Bromomethane	ND	95.0	ND	95.0				
2-Butanone (MEK)	ND	144	ND	144				
Carbon disulfide	ND	39.3	ND	39.3				
Carbon tetrachloride	ND	56.5	ND	56.5				
Chlorobenzene	ND	34.4	ND	34.4				
Chloroethane	ND	57.0	ND	57.0				
2-Chloroethyl vinyl ether	ND	43.2	ND	43.2				
Chloroform	ND	61.0	ND	61.0				
1-Chlorohexane	ND	40.2	ND	40.2				
Chloromethane	ND	70.5	ND	70.5				
3-Chloropropene	ND	47.6	ND	47.6				
1,2-Dibromo-3-chloropropane	ND	525	ND	525				
Dibromochloromethane	ND	83.0	ND	83.0				
1,2-Dibromoethane	ND	64.5	ND	64.5				
Dibromomethane	ND	84.5	ND	84.5				

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL07-148		OFPT-GW07-AFT					
Lab ID:	9605646-01A		9605646-02A					
File ID:	G0603648		G0603649					
Date Collected:	05/25/96		05/25/96					
Date Prepared:								
Date Analyzed:	06/04/96 14:00:00		06/04/96 14:28:00					
Dilution Factor:	500		500					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	256	ND	256				
1,2-Dichlorobenzene	ND	52.5	ND	52.5				
1,3-Dichlorobenzene	ND	29.6	ND	29.6				
1,4-Dichlorobenzene	ND	35.0	ND	35.0				
Dichlorodifluoromethane	ND	118	ND	118				
1,1-Dichloroethane	ND	43.2	ND	43.2				
1,2-Dichloroethane	ND	62.5	ND	62.5				
1,1-Dichloroethene	ND	38.4	ND	38.4				
cis-1,2-Dichloroethene	666	41.6	696	41.6				
trans-1,2-Dichloroethene	ND	51.5	ND	51.5				
1,2-Dichloropropane	ND	42.6	ND	42.6				
cis-1,3-Dichloropropene	ND	27.2	ND	27.2				
trans-1,3-Dichloropropene	ND	36.6	ND	36.6				
Ethyl methacrylate	ND	45.7	ND	45.7				
Ethylbenzene	ND	53.5	ND	53.5				
2-Hexanone	ND	96.5	ND	96.5				
Iodomethane	ND	27.6	ND	27.6				
Methyl methacrylate	ND	110	ND	110				
4-Methyl-2-pentanone(MIBK)	ND	86.0	ND	86.0				
Methylene chloride	56.4 J	79.5	54.2 J	79.5				

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-EL07-148		OFPT-GW07-AFT					
Lab ID:	9605646-01A		9605646-02A					
File ID:	G0603648		G0603649					
Date Collected:	05/25/96		05/25/96					
Date Prepared:								
Date Analyzed:	06/04/96 14:00:00		06/04/96 14:28:00					
Dilution Factor:	500		500					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	49.0	ND	49.0				
1,1,1,2-Tetrachloroethane	ND	70.5	ND	70.5				
1,1,2,2-Tetrachloroethane	ND	114	ND	114				
Tetrachloroethene	ND	48.0	ND	48.0				
Toluene	ND	31.0	ND	31.0				
1,1,1-Trichloroethane	ND	46.4	ND	46.4				
1,1,2-Trichloroethane	ND	89.5	ND	89.5				
Trichloroethene	10100	46.6	10700	46.6				
Trichlorofluoromethane	ND	168	ND	168				
1,2,3-Trichloropropane	ND	128	ND	128				
1,1,2-Trichlorotrifluoroethane	ND	69.0	ND	69.0				
Vinyl acetate	ND	26.2	ND	26.2				
Vinyl chloride	ND	116	ND	116				
m&p-Xylene	ND	65.5	ND	65.5				
o-Xylene	ND	39.4	ND	39.4				

Method Volatile Organics SW8260A

Test Code 826SWAFP

Project Sample ID:	OFPT-EL07-148	OFPT-GW07-AFT		
Lab ID:	9605646-01A	9605646-02A		
File ID:	G0603648	G0603649		
Date Collected:	05/25/96	05/25/96		
Date Prepared:				
Date Analyzed:	06/04/96 14:00:00	06/04/96 14:28:00		
Dilution Factor:	500	500		
Matrix:	Water	Water		
Units:	ug/L	ug/L		
Report as:	received	received		
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	97	97		
1,2-Dichloroethane-d4	99	101		
Toluene-d8	103	103		

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LCE2-032		OFPT-LCE2-032					
Lab ID:	9605512-01A		9605512-01B					
File ID:	F0522611		F0522630					
Date Collected:	05/21/96		05/21/96					
Date Prepared:								
Date Analyzed:	05/23/96 01:00:00		05/23/96 09:52:00					
Dilution Factor:	1		3					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Acetone	31.2	0.274	30.8	0.822				
Benzene	0.0575 BJ	0.0633	0.134 BJ	0.190				
Bromobenzene	ND	0.0516	ND	0.155				
Bromodichloromethane	ND	0.0629	ND	0.189				
Bromoform	ND	0.0854	ND	0.256				
Bromomethane	ND	0.101	ND	0.303				
2-Butanone(MEK)	2.59	0.819	ND	2.46				
Carbon disulfide	ND	0.0780	ND	0.234				
Carbon tetrachloride	ND	0.0527	ND	0.158				
Chlorobenzene	ND	0.0665	ND	0.200				
Chloroethane	ND	0.0693	ND	0.208				
2-Chloroethyl vinyl ether	ND	0.0862	ND	0.259				
Chloroform	ND	0.0773	ND	0.232				
1-Chlorohexane	ND	0.124	ND	0.372				
Chloromethane	ND	0.0454	ND	0.136				
3-Chloropropene	ND	0.0735	ND	0.220				
1,2-Dibromo-3-chloropropane	ND	0.394	ND	1.18				
Dibromochloromethane	ND	0.0454	ND	0.136				
1,2-Dibromoethane	ND	0.0808	ND	0.242				
Dibromomethane	ND	0.0692	ND	0.208				

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LCE2-032		OFPT-LCE2-032					
Lab ID:	9605512-01A		9605512-01B					
File ID:	F0522611		F0522630					
Date Collected:	05/21/96		05/21/96					
Date Prepared:								
Date Analyzed:	05/23/96 01:00:00		05/23/96 09:52:00					
Dilution Factor:	1		3					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
trans-1,4-Dichloro-2-butene	ND	0.155	ND	0.465				
1,2-Dichlorobenzene	ND	0.110	ND	0.330				
1,3-Dichlorobenzene	ND	0.106	ND	0.318				
1,4-Dichlorobenzene	ND	0.123	ND	0.369				
Dichlorodifluoromethane	ND	0.0853	ND	0.256				
1,1-Dichloroethane	ND	0.0559	ND	0.168				
1,2-Dichloroethane	ND	0.0865	ND	0.260				
1,1-Dichloroethene	ND	0.0608	ND	0.182				
cis-1,2-Dichloroethene	0.680	0.0541	0.622	0.162				
trans-1,2-Dichloroethene	0.0328 J	0.0567	ND	0.170				
1,2-Dichloropropane	ND	0.0566	ND	0.170				
cis-1,3-Dichloropropene	ND	0.0614	ND	0.184				
trans-1,3-Dichloropropene	ND	0.0657	ND	0.197				
Ethyl methacrylate	ND	0.0788	ND	0.236				
Ethylbenzene	2.18 B	0.0655	1.40 B	0.196				
2-Hexanone	ND	0.211	ND	0.633				
Iodomethane	ND	0.0342	ND	0.103				
Methyl methacrylate	ND	0.0647	ND	0.194				
4-Methyl-2-pentanone(MIBK)	75.6 ER	0.146	60.8	0.438				
Methylene chloride	1.14 B	0.116	2.78 B	0.348				

RESULTS SUMMARY (Cont'd)

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LCE2-032		OFPT-LCE2-032					
Lab ID:	9605512-01A		9605512-01B					
File ID:	F0522611		F0522630					
Date Collected:	05/21/96		05/21/96					
Date Prepared:								
Date Analyzed:	05/23/96 01:00:00		05/23/96 09:52:00					
Dilution Factor:	1		3					
Matrix:	Water		Water					
Units:	ug/L		ug/L					
Report as:	received		received					
Column:								
Analyte	Conc.	DL	Conc.	DL	Conc.	DL	Conc.	DL
Styrene	ND	0.0596	ND	0.179				
1,1,1,2-Tetrachloroethane	ND	0.0590	ND	0.177				
1,1,2,2-Tetrachloroethane	ND	0.0729	ND	0.219				
Tetrachloroethene	ND	0.118	0.0480 BJ	0.354				
Toluene	0.175 B	0.0537	0.182 B	0.161				
1,1,1-Trichloroethane	ND	0.0388	0.398	0.116				
1,1,2-Trichloroethane	ND	0.0714	ND	0.214				
Trichloroethene	24.1 B	0.127	18.8 B	0.381				
Trichlorofluoromethane	ND	0.0681	ND	0.204				
1,2,3-Trichloropropane	ND	0.125	ND	0.375				
1,1,2-Trichlorotrifluoroethane	ND	0.0967	ND	0.290				
Vinyl acetate	ND	0.0639	ND	0.192				
Vinyl chloride	ND	0.0307	ND	0.0921				
m&p-Xylene	8.41 B	0.184	5.75 B	0.552				
o-Xylene	6.59	0.0627	4.48	0.188				

Method Volatile Organics SW8260A
Test Code 826SWAFP

Project Sample ID:	OFPT-LCE2-032	OFPT-LCE2-032		
Lab ID:	9605512-01A	9605512-01B		
File ID:	F0522611	F0522630		
Date Collected:	05/21/96	05/21/96		
Date Prepared:				
Date Analyzed:	05/23/96 01:00:00	05/23/96 09:52:00		
Dilution Factor:	1	3		
Matrix:	Water	Water		
Units:	ug/L	ug/L		
Report as:	received	received		
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL

Surrogate(s)	Recovery %	Recovery %	Recovery %	Recovery %
1,4-Bromofluorobenzene	96	106		
1,2-Dichloroethane-d4	107	106		
Toluene-d8	96	105		

RESULTS SUMMARY

05/24/96 10:46:38

Method Ignitability
Test Code IGNSWA00

Project Sample ID:	OFPT-LCE2-012	OFPT-LCE2-012		
Lab ID:	9605513-01A	9605513-01A		
File ID:	IGN0521-4	IGN0523-5		
Date Collected:	05/21/96	05/21/96		
Date Prepared:				
Date Analyzed:	05/23/96 14:00:00	05/23/96 14:00:00		
Dilution Factor:	1	1		
Matrix:	Water	Water		
Units:	deg. F	deg. F		
Report as:	received	received		
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL
Ignitability	>140	>140		

Quantitation Report

Data File : D:\HPCHEM\1\DATA\F052260\F0522630.D
Acq Time : 23 May 96 9:52 am
Sample : 8260SWAFP,960551201B,OFPT-LCE2-032,
Misc : 3,
Quant Time: May 24 10:20 1996

Operator: TLSHAW
Inst : MSD_A
Multiplr: 1.00

Method : d:\HPCHEM\1\METHODS\FF05156P.M
Title : VOLATILE ORGANICS BY GC/MS
Last Update : Tue May 21 17:39:50 1996
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS)	4.53	130	182015	16.7000	PPB	0.00
33) 1,4-Difluorobenzene (IS)	5.22	114	1306368	16.7000	PPB	0.00
48) Chlorobenzene-d5 (IS)	7.60	82	540694	16.7000	PPB	0.00
System Monitoring Compounds						%Recovery
30) 1,2-Dichloroethane-d4 (Sur	4.82	67	141511	17.6551	PPB	105.72
45) Toluene-d8 (Surr)	6.32	98	1408935	17.4529	PPB	104.51
66) 1,4-Bromofluorobenzene (Su	8.93	95	482766	17.7629	PPB	106.36
Target Compounds				Final Result / Instrument Result		Qvalue
11) Acetone	3.71	43	29903 30.8	10.2700	PPBm	84
18) Methylene Chloride	3.88	84	23192 2.78	0.9265 B	PPB	89
26) cis-1,2-Dichloroethene	4.46	96	3843 .022	0.2072	PPB	92
31) 1,1,1-Trichloroethane	4.82	97	3876 .398	0.1327	PPB#	1
35) Benzene	4.98	78	4259 .134	0.0448 B	PPB#	80
38) Trichloroethene	5.44	130	17641 18.8	6.2527 B	PPB	97
44) 4-Methyl-2-Pentanone	6.05	43	18570 100.8	0.2562	PPB	97
47) Toluene (CCC)	6.37	92	3493 .82	0.0605 B	PPB	89
55) Tetrachloroethene	7.04	164	360 .048	0.0160 B	PPB#	57
59) Ethylbenzene (CCC)	7.89	106	15872 1.39	0.4650 B	PPB	90
60) m&p-Xylene	8.03	106	79255 5.75	1.9153 B	PPB	99
63) o-Xylene	8.41	106	57381 4.48	1.4946	PPB	95

use 4 M2 Results from this run

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : D:\HPCHEM\1\DATA\F052260\F0522611.D
Acq Time : 23 May 96 1:00 am
Sample : 826SWAFP,960551201A,OFPT-LCE2-032,
Misc : 1,
Quant Time: May 24 10:23 1996

Operator: TLSHAW
Inst : MSD_A
Multiplr: 1.00

Method : d:\HPCHEM\1\METHODS\FF05156P.M
Title : VOLATILE ORGANICS BY GC/MS
Last Update : Tue May 21 17:39:50 1996
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS)	4.54	130	152667	16.7000	PPB	0.01
33) 1,4-Difluorobenzene (IS)	5.22	114	1064181	16.7000	PPB	0.01
48) Chlorobenzene-d5 (IS)	7.60	82	401348	16.7000	PPB	0.01
System Monitoring Compounds						%Recovery
30) 1,2-Dichloroethane-d4 (Sur	4.82	67	120248	17.8863	PPB	107.10
45) Toluene-d8 (Surr)	6.32	98	1053752	16.0238	PPB	95.95
66) 1,4-Bromofluorobenzene (Su	8.93	95	322001	15.9612	PPB	95.58
Target Compounds						Qvalue
11) Acetone	3.69	43	76311	31.2469 B	PPBm	82
18) Methylene Chloride	3.87	84	23929	1.1397 B	PPB	90
19) trans-1,2-Dichloroethene	4.09	96	564	0.0328	PPB#	73
25) Methyl Ethyl Ketone	4.36	43	4997	2.5919	PPB#	43
26) cis-1,2-Dichloroethene	4.46	96	10582	0.6803 B	PPB	96
35) Benzene	4.98	78	4456	0.0575 B	PPB#	89
38) Trichloroethene	5.44	130	554903	24.1440 B	PPB	98
44) 4-Methyl-2-Pentanone	6.03	43	564935	75.6460 B	PPB	97
47) Toluene (CCC)	6.38	92	8228	0.1748 B	PPB#	88
59) Ethylbenzene (CCC)	7.90	106	55264	2.1814 B	PPB	97
60) m&p-Xylene	8.02	106	258262	8.4083 B	PPB	100
63) o-Xylene	8.42	106	187698	6.5865	PPB	100

take all analytes from this run except 4M2P

This quantitation report lists only compounds detected. Any compounds not listed were not detected, including vinyl chloride, which has a DL of 0.25 ppb.

(#) = qualifier out of range (m) = manual integration
F0522611.D FF05156P.M Fri May 24 10:28:52 1996 MSDA Page 1

Quantitation Report

Data File : D:\HPCHEM\1\DATA\F052260\F0522607.D
Acq Time : 22 May 96 11:23 pm
Sample : 826SWAEM,BLK961553,
Misc : 1,
Quant Time: May 24 10:28 1996

Operator: TLSHAW
Inst : MSD_A
Multiplr: 1.00

Method : D:\HPCHEM\1\METHODS\FF05156P.M
Title : VOLATILE ORGANICS BY GC/MS
Last Update : Tue May 21 17:39:50 1996
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS)	4.53	130	183493	16.7000	PPB	0.00
33) 1,4-Difluorobenzene (IS)	5.22	114	1289645	16.7000	PPB	0.00
48) Chlorobenzene-d5 (IS)	7.60	82	484800	16.7000	PPB	0.00
System Monitoring Compounds						%Recovery
30) 1,2-Dichloroethane-d4 (Sur	4.82	67	142687	17.6584	PPB	105.74
45) Toluene-d8 (Surr)	6.32	98	1293711	16.2334	PPB	97.21
66) 1,4-Bromofluorobenzene (Su	8.93	95	390774	16.0359	PPB	96.02
Target Compounds						Qvalue
14) 1,1,2-Trichlorotrifluoroet	3.84	101	1190	0.0536	PPB	74
18) Methylene Chloride	3.88	84	14041	0.5564	PPB	92
35) Benzene	4.98	78	4223	0.0450	PPB#	84
38) Trichloroethene	5.44	130	794	0.0285	PPB#	65
47) Toluene (CCC)	6.38	92	2257	0.0396	PPB	98
55) Tetrachloroethene	7.04	164	1613	0.0801	PPB	91
56) Chlorobenzene (SPCC)	7.63	112	2019	0.0368	PPB#	43
58) 1-Chlorohexane	7.83	91	2471	0.0787	PPB	75
59) Ethylbenzene (CCC)	7.90	106	1562	0.0510	PPB#	83
60) m&p-Xylene	8.04	106	4900	0.1321	PPB	94
62) Styrene	8.39	104	1444	0.0281	PPB	85

(#) = qualifier out of range (m) = manual integration

RESULTS SUMMARY

Work Order # 9605513
Page 5

Method Ignitability
Test Code IGNSWA00

Project Sample ID:	OFPT-LCE2-032	OFPT-LCE2-032		
Lab ID:	9605513-01A	9605513-01A		
File ID:	IGN0523-4	IGN0523-5		
Date Collected:	05/21/96	05/21/96		
Date Prepared:				
Date Analyzed:	05/23/96 14:00:00	05/23/96 14:00:00		
Dilution Factor:	1	1		
Matrix:	Water	Water		
Units:	deg. F	deg. F		
Report as:	received	received		
Column:				
Analyte	Conc. DL	Conc. DL	Conc. DL	Conc. DL
Ignitability	>140	>140		

APPENDIX D

GAC Analytical Data

(11 RCRA Test and SW8010/8020)

Wheelabrator Clean Air Systems Inc.

2130 Leo Avenue
Los Angeles, CA 90040
Tel. 213-722-7500
Fax. 213-722-8207

ANALYTICAL REPORT

Customer:	Offut Air Force Base	Lab I.D. #:	6156
Job Order#	1162 OA	Date Reported:	06/17/96
Address:	Bldg 301 Offut , Nebraska	Date Sampled:	05/25/96
Sampled by:	Tucker Connally	Date Received:	05/30/96
Consultant:	Radian Corpration; 8501 Mopac Blvd; Austin , Texas	Date Analyzed:	06/17/96
		Sample Matrix:	Solid GAC

EPA METHOD 8010/8020
PURGEABLE ORGANICS

COMPOUND	CAS #	CONCENTRATION (MG/KG)	LIMIT OF DETECTION (MG/KG)
Chloromethane	74-87-3	<1.0	1.0
Vinyl Chloride	75-01-4	<1.0	1.0
Bromomethane	74-83-9	<1.0	1.0
Chloroethane	75-00-3	<1.0	1.0
Trichlorofluoromethane	75-69-4	<1.0	1.0
1,1-Dichloroethene	75-35-4	<0.05	0.05
Methylene Chloride	75-09-2	<0.05	0.05
1,1-Dichloroethane	75-34-3	<0.05	0.05
Chloroform	67-66-3	<0.05	0.05
Carbon Tetrachloride	56-23-5	<0.05	0.05
Benzene	71-43-2	<0.05	0.05
cis 1,2- Dichloroethene	107-06-2	<0.05	0.05
Trichloroethene	79-01-6	4140	50
Bromodichloromethane	75-27-4	<0.05	0.05

Customer: Offut Air Force Base		Lab I.D. #: 6156	
COMPOUND	CAS #	CONCENTRATION (MG/KG)	LIMIT OF DETECTION (MG/KG)
Ethylbenzene	100-41-4	<0.05	0.05
xylene (total)	1330-20-7	<0.05	0.05
Styrene	100-42-5	<0.05	0.05
cis-1,3-Dichloropropene	10061-01-5	<0.05	0.05
trans-1,3-Dichloropropene	10061-02-6	<0.05	0.05
Toluene	108-88-3	<0.05	0.05
,1,2-Trichloroethane	79-00-5	<0.05	0.05
Tetrachloroethene	127-18-4	<0.05	0.05
Dibromochloromethane	124-48-1	<0.05	0.05
Chlorobenzene	108-90-7	<0.05	0.05
1,1,2,2-Tetrachloroethane	630-20-6	<0.05	0.05
1,1,1-Trichloroethane	71-55-6	<0.05	0.05
1,4-Dichlorobenzene	106-46-7	<0.05	0.05
1,3-Dichlorobenzene	541-73-1	<0.05	0.05
1,2-Dichlorobenzene	95-50-1	<0.05	0.05

Purgeable Halocarbons and Aromatics are measured by extraction using EPA Method 5030 with methanol followed by analysis using EPA Method 8010/8020 which utilizes a Varian gas chromatograph (GC) equipped with a Hall & PID (photoionization) Detector in series.

Respectfully submitted,

Dr. James R. Graham, Ph.D
Technical Director

Wheelabrator Clean Air Systems Inc.

2130 Leo Avenue
Los Angeles, CA 90040
Tel. 213-722-7500
Fax. 213-722-8207

Analytical Report

Customer:	Offut Air Force Base	**Lab Number:**	6156
Address:	Bldg 301 Offut , Nebraska	**Date Sampled:**	5/25/1996
Contact:	Tucker Conally	**Date Received:**	5/30/1996
Test Request:	One sample received intact with COD form for 11 RCRA tests and 8010/80920 analysis .	**Date Reported:**	6/17/1996
Consultant:	Radian Corporation	**Date Analyzed:**	5/30-6/16 1996
	8501 Mopac Blvd., Austin, TX	**Sample Matrix:**	GAC

PARAMETER	DESCRIPTION	METHODS	RESULTS	RCRA LIMITS
hysical escription	Carbon is spent material; No foreign material present; vapor phase carbon; CC 601 12x30	ASTM D4979-89	Acceptable	*NA
Flash Point	Closed-cup Pensky Martens Flashpoint tester or a Setaflash Closed Cup Tester (ASTM D-3278-78)	EPA 1010M	> 140 F**	Must have a Flashpoint >60 C (140 F)
pH	For corrosive identity;sample mixed with 1:1 DI water	EPA 9045	7.9 pH units	< or = to 2 or > or = to 12.5
ompatibility	Sample did not exhibit adverse reactions with water; in stable form.	IM-101S (internal)	compatable	*NA
yanide	Sample extracted by SW-846,Section 7.3 methodology	EPA 9010	< 10 mg/kg	250 mg HCN/kg
ulfide	Sample extracted by SW-846,Section 7.3 methodology	EPA 9030	< 10 mg/kg	500 mg H2S/kg
Lead	Sample extracted by EPA Method 3050 methodology	EPA 7420	4.5 mg/kg	5.0 mg/kg
ercury	Sample extracted by EPA Method 7000, cold vapor technique	EPA 7471	< 0.2 mg/kg	0.2 mg/kg
Halogen Content	Sample extract from BTU combustate solution	EPA 9252	10970 mg/kg	*NA
ulfur Content	Sample extract from BTU combustate solution	ASTM D4239-85	< 50 mg/kg	*NA
Heat of ombustion (BTU)	Parr Bomb Calorimeter	EPA 5050	6623 BTU/lb	*NA

Not Applicable; No defined RCRA Limits; For internal use only

Sample is not ignitable with an open flame.

pleted by:

garet Jefferson
nalytical Chemist

Reviewed by:

James R. Graham, PhD
Technical Director

APPENDIX E

Supporting Calculations

RADIAN CORPORATION

CALCULATION SHEET

CALC. NO._____

SIGNATURE_____ DATE_____ CHECKED_____ DATE_____

PROJECT_____ JOB NO._____

SUBJECT_____ SHEET_____ OF_____ SHEETS

1. Velocity @ Standard Temperature & Pressure:

$$V_2 = \left(\frac{P_2}{P_1}\right) \cdot \left(\frac{T_1}{T_2}\right) V_1$$

where

V_1 = velocity reading from Pitot tube
V_2 = velocity @ STP
P_1 = barometric pressure (Base weather data)
P_2 = 1 ATM = 29.92 in Hg
T_1 = temperature on site (Base weather data)
T_2 = 20°C = 293 K

2. Groundwater Contaminant Removal Rate:

$$\boxed{\text{GW Flow}}\ \frac{\text{gal}}{\text{min}} \times \boxed{\text{Contaminant Concentration}}\ \frac{\mu g}{L} \times \frac{0.000001\ g}{\mu g} \times 3.785\ \frac{L}{\text{gal}} \times \frac{1\ lb}{454\ g} = \boxed{\frac{lb}{\text{min}}}$$

3. Vapor Contaminant Removal Rate:

$$C_{MASS} = 40.9 \times C_{ppmv} \times M.W.$$

where:

C_{MASS} = mass concentration ($\mu g/m^3$)
C_{ppmv} = volume concentration (ppm)
M.W. = molecular weight of contaminant

$$\boxed{\text{Vapor Flow}}\ \frac{ft^3}{\text{min}} \times \boxed{\text{Contaminant Concentration}}\ ppmv \times 40.9 \times M.W. \frac{\mu g}{m^3} \times \frac{0.028\ m^3}{ft^3} \times \frac{10^{-6}\ g}{\mu g} \times \frac{1\ lb}{454\ g} = \boxed{\frac{lb}{\text{min}}}$$

APPENDIX F

Drum Headspace Readings

DRUM INVENTORY

Drum No.	Contents	Well I.D.	Depth Interval (ft)	Date of IDW Generation	Headspace Concentration (ppm)
1	Soil Cuttings	B301-EW1	0-7	5/13/96	0.0
2	Soil Cuttings	B301-EW1	7-16	5/13/96	0.0
3	Soil Cuttings	B301-EW1	16-23	5/13/96	0.0
4	Soil Cuttings	B301-EW1	23-31	5/13/96	0.0
5	Soil Cuttings	B301-EW1	31-41	5/13/96	0.0
6	Soil Cuttings	B301-EW1	41-49	5/13/96	4.2
7	Soil Cuttings	B301-EW1	49-58	5/13/96	0.0
8	Soil Cuttings	B301-EW1	58-70	5/13/96	1.8
9	Soil Cuttings	B301-EW1	70-80[a]	5/14/96	3.7
10	Soil Cuttings	B301-EW1	80-90[a]	5/14/96	0.0
11	Soil/Water	B301-EW1	NA	5/14/96	2.2
12	Soil Cuttings	B301-PZ1	0-10	5/15/96	0.2
13	Soil Cuttings	B301-PZ1	10-18	5/15/96	2.8
14	Soil Cuttings	B301-PZ1	18-28	5/15/96	3.0
15	Soil Cuttings	B301-PZ1	28-35	5/15/96	0.2
16	Soil Cuttings	B301-PZ1	35-40	5/15/96	0.1
17	Soil Cuttings	B301-PZ1	40-45	5/15/96	0.6
18	Soil Cuttings	B301-PZ1	45-50	5/15/96	0.2
19	Soil Cuttings	B301-PZ1	50-58	5/15/96	0.3
20	Soil Cuttings	B301-PZ1	58-65	5/15/96	0.4
21	Soil Cuttings	B301-PZ1	0-65[a]	5/15/96	0.0
22	Soil Cuttings	B301-PZ2	0-7	5/16/96	0.3
23	Soil Cuttings	B301-PZ2	7-15	5/16/96	3.0
24	Soil Cuttings	B301-PZ2	15-22	5/16/96	0.4
25	Soil Cuttings	B301-PZ2	22-30	5/16/96	0.9
26	Soil Cuttings	B301-PZ2	30-38	5/16/96	1.2
27	Soil Cuttings	B301-PZ2	38-50	5/16/96	0.2
28	Soil Cuttings	B301-PZ2	50-65	5/16/96	0.1
29	Soil Cuttings	B301-PZ2	0-65[a]	5/16/96	0.1
30	Soil Cuttings	B301-PZ2	0-65[a]	5/16/96	1.8
31	Soil/Water	B301-EW1	NA[b]	5/16/96	0.2
32	Soil/Water	B301-EW1	NA[b]	5/16/96	0.9
33	Soil/Water	B301-EW1	NA[b]	5/16/96	0.7
34	Soil/Water	B301-EW1	NA[b]	5/16/96	0.0
35	Soil Cuttings	B301-PZ3	0-8	5/16/96	1.8
36	Soil Cuttings	B301-PZ3	8-17	5/16/96	1.4
37	Soil Cuttings	B301-PZ3	17-25	5/16/96	2.8
38	Soil Cuttings	B301-PZ3	25-35	5/16/96	4.2
39	Soil Cuttings	B301-PZ3	35-43	5/16/96	1.2
40	Soil Cuttings	B301-PZ3	43-51	5/16/96	0.0
41	Soil Cuttings	B301-PZ3	51-60	5/16/96	2.3
42	Soil Cuttings	B301-PZ3	0-65[a]	5/16/96	3.5
43	Concrete Cuttings	B301-PZ2	NA	5/17/96	NA
44	Concrete Cuttings	B301-PZ3	NA	5/17/96	NA
45	Concrete Cuttings	B301-EW1	NA	5/17/96	NA

DRUM INVENTORY Cont.

Drum I.D.	Contents	Date of IDW Generation	Headspace Concentration (ppm)
A	Water/Sediment	5/25/96	0.0
B	Water/Sediment	5/25/96	1.2
C	Water/Sediment	5/25/96	0.8
D	None[c]	5/25/96	NA
E	Water/Sediment	5/25/96	1.8
F	None[c]	5/25/96	NA
G	None[c]	5/25/96	NA
H	None[c]	5/25/96	NA
I	None[c]	5/25/96	NA
J	None[c]	5/25/96	NA
K	None[c]	5/25/96	NA
L	None[c]	5/25/96	NA
M	None[c]	5/25/96	NA
N	None[c]	5/25/96	NA
O	None[c]	5/25/96	NA
P	None[c]	5/25/96	NA

[a] Contains cuttings generated while pulling the augers.
[b] Contains cuttings from mud rotary drilling. Depths are indeterminable.
[c] These drums were used to store water generated during drilling operations. The water was pumped out of the drums and treated once drilling operations were completed.